JUNE 29, 1953

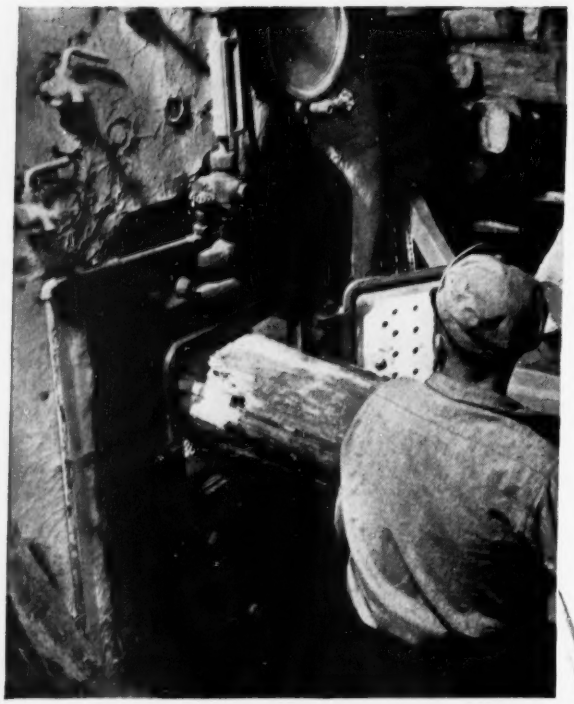
STEEL

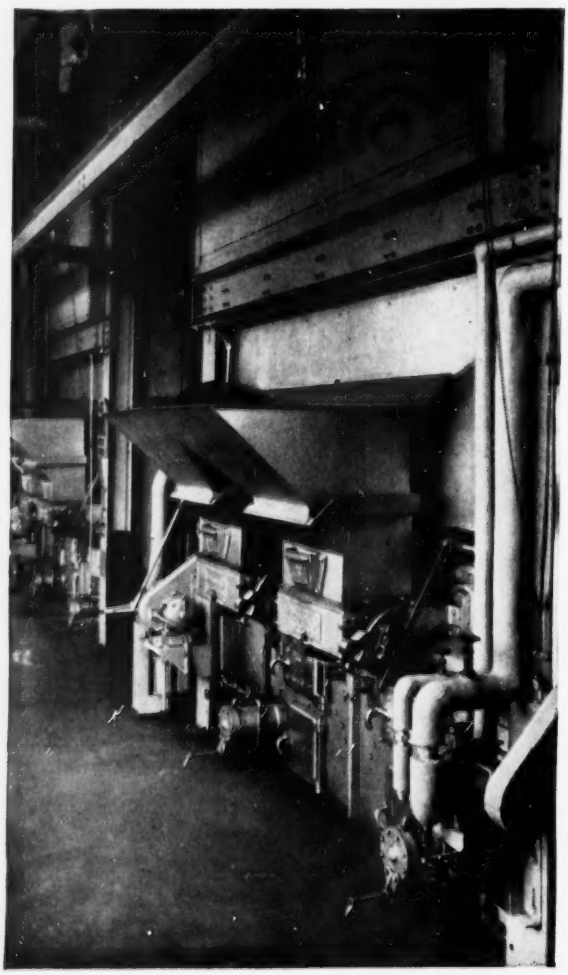
THE WEEKLY MAGAZINE OF METALWORKING

No. 5 of a Management Series

Forecasting Business Trends

To plan today, keep an eye on tomorrow. For hints on how to forecast, plus a prophecy of coming economic conditions, see p. 47





old or new...

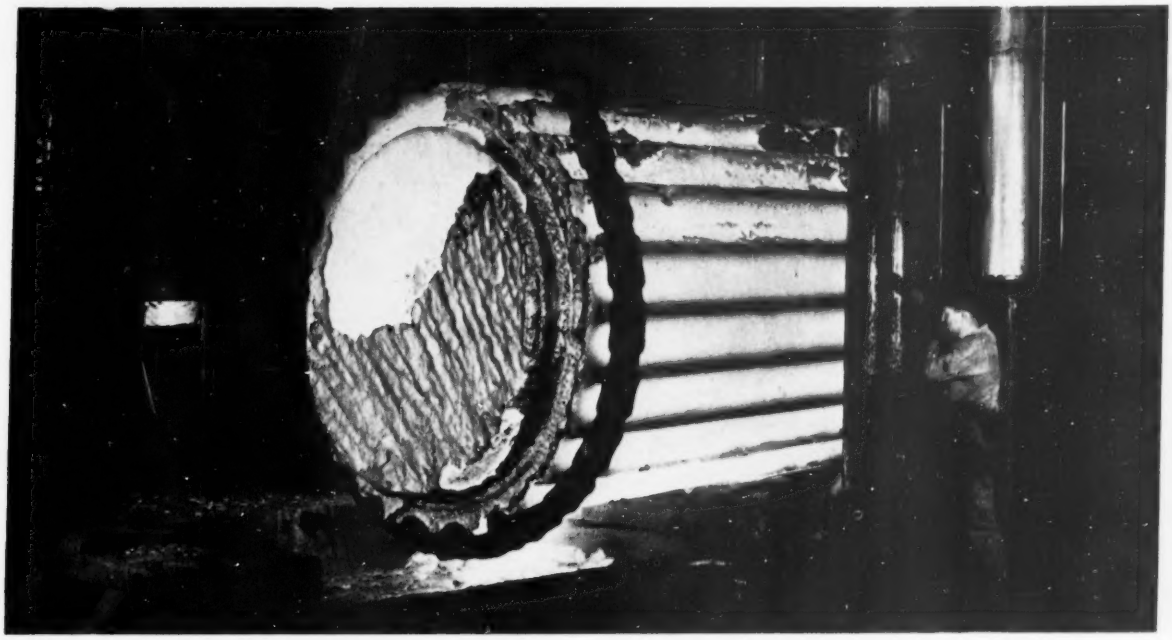
no boiler is better than its *Tubes*

Starting with this fact, it is reasonable and practical to install the best available boiler tubes—in terms of potential service life—in any boiler. Since all boiler tubes produced by quality mills must and do conform to the same specifications for the same job, the choice of a better boiler tube must go beyond specifications and visible comparisons. Boilers of all types—equipped with B&W boiler tubes—have been meeting utility, industrial, and every other kind of rugged service requirement, large and small, over the years. When better boilers are built, you will find them equipped with B&W Tubes.

Say B&W before you say* WELDED BOILER TUBES—*for Service-Proved Dependability.

B&W SEAMLESS and WELDED TUBES

THE BABCOCK & WILCOX COMPANY
TUBULAR PRODUCTS DIVISION
Beaver Falls, Pa.—Seamless Tubing; Welded Stainless Steel Tubing
Alliance, Ohio—Welded Carbon Steel Tubing TA-1759 (A)



GIANT INGOT YIELDS STEEL FOR TIE-ROD FORGING 70 FT LONG

One of the largest steel ingots ever produced was recently cast at Bethlehem and used in the making of a huge forging.

The ingot, pictured here, had a diameter of 11 ft, 2 in.; weighed better than 700,000 lb. Pouring was done through a secondary ladle holding 75 to 80 tons, and the ingot was allowed to cool for 96 hours before being taken from the mold.

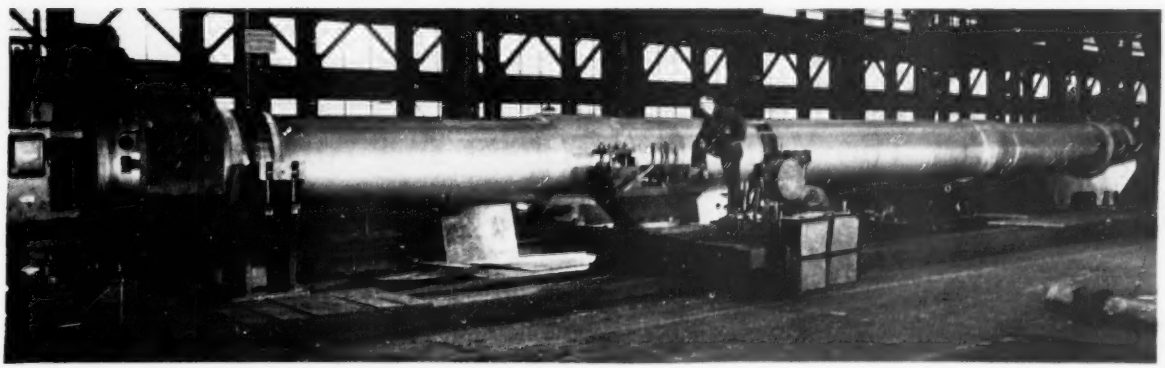
This giant yielded the steel for the massive tie-rod forging shown below. The finished piece, an astonishing 70 ft long, will be used in a 25,000-ton press. At the stage shown in the photograph, the weight of the forging was approximately 320,000 lb.

It is interesting to note, in contrast, that Bethlehem also produces some of the smallest forgings made, a few being so tiny that you can balance them on a fingertip.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL



The New Louisiana Purchase

EVERY day America crosses a frontier—the frontier of a new market. It is the market created by an ever growing population. Since Pearl Harbor, our population has increased 23½ millions—more than all the people now living in the region west of the Mississippi once called the Louisiana purchase, that vast billion-acre area which provided us with geographical frontiers for a hundred years.

During 1952, 8,500 babies were born daily, increasing our population by nearly 3,000,000 people. New families and bigger families need more and bigger houses, more food, clothing, cars, roads, hospitals, churches, schools. Their needs call for continuing and increasing production from farms and factories.

There are those among us who say a decline in government spending will bring depression. But where is there room for depression when we add the population of another Minnesota or an Iowa to our nation each year—when the need for goods and services increases steadily? In fact, only by tapering off our vast programs of government spending can industry and business hope to provide sufficient goods to maintain our present standard of living and satisfy the demands of our ever growing population.

Let no one tell you America has crossed its last frontier.

QUALITY V YOUNGSTOWN SERVICE

The Youngstown Sheet and Tube Company

General Offices--Youngstown 1, Ohio
Export Offices--500 Fifth Avenue, New York

MANUFACTURERS OF CARBON ALLOY AND YOLOY STEELS

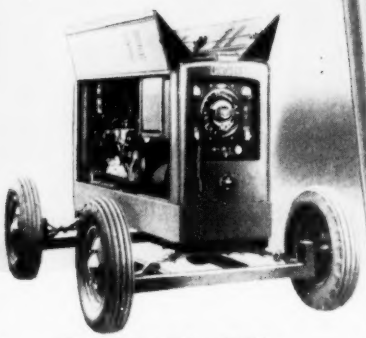
RAILROAD TRACK SPIKES - CONDUIT - HOT AND COLD FINISHED CARBON AND ALLOY BARS - PIPE AND TUBULAR PRODUCTS - WIRE - ELECTROLYTIC TIN PLATE - COKE TIN PLATE - RODS - SHEETS - PLATES.

HOBART 300 amp. Portable Electric Drive DC Welder

HOBART ARC WELDERS

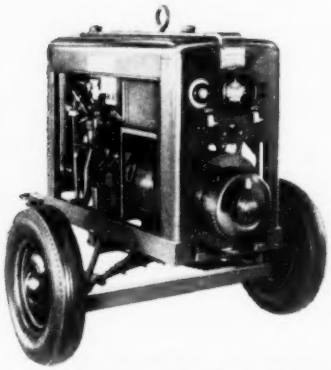
"ONE OF THE WORLD'S LARGEST BUILDERS OF ARC WELDING EQUIPMENT"

Here's the RIGHT COMBINATION for...



Gas Engine Drive Welder

...faster welding at lower cost!



"Pipeliner" Gas Drive Welder

Nothing is more essential to profitable welding than lower costs and constant speedy performance.

Hobart Welders and Hobart Electrodes are designed to give you the most efficient welding performance. Don't take our word, check any welder point by point against a Hobart and you'll soon see why advanced design, heavy duty construction, remote control have earned HOBART WELDERS the top position in every branch of welding. The coupon will bring you complete details—mail today.

Hobart Brothers Company
Box ST-631, Troy, Ohio

Get all the facts

Production welding is big business—an operation that can easily make or lose you thousands of dollars per year, depending solely on the ability of your welders and electrodes to give you full value. To enable you to check Hobart against others—

Use the COUPON!

FREE!

☐ **"How to get better welds."**
Valuable new vest pocket booklet.

HOBART BROTHERS COMPANY, BOX ST-631, TROY, OHIO

Without obligation, send information on items checked below:
☐ Electric Drive Welder ☐ Gas Drive Welder ☐ Pipeliner Welder ☐ Bantam Champ Welder. Send me ☐ Welder Catalog ☐ Electrode Catalog ☐ Accessory Catalog

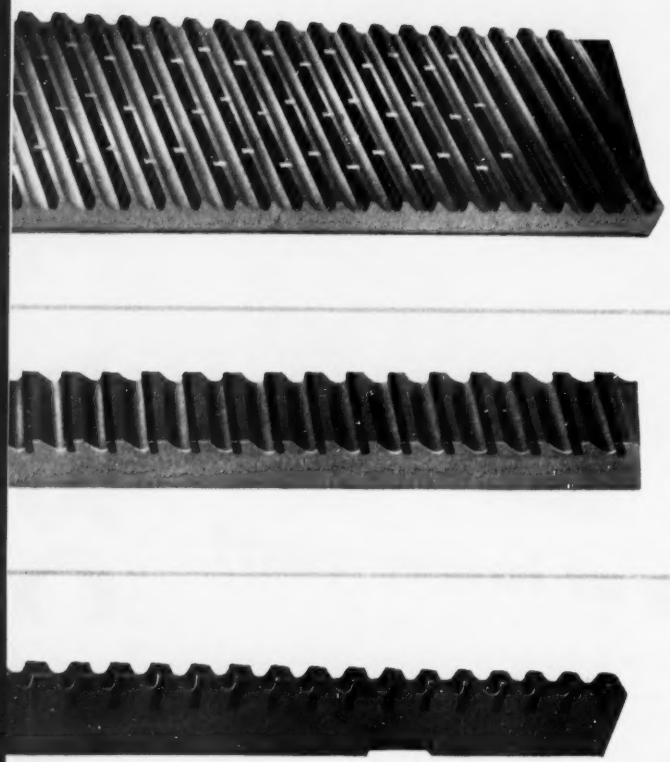
NAME _____ POSITION _____

FIRM _____

ADDRESS _____

WHEN BROACHING...

SAVE WITH CARBIDES



With Continental Carbide tipped broaches you'll get more pieces per grind, more pieces per broach, and more pieces per dollar. They are especially effective on cast iron parts.

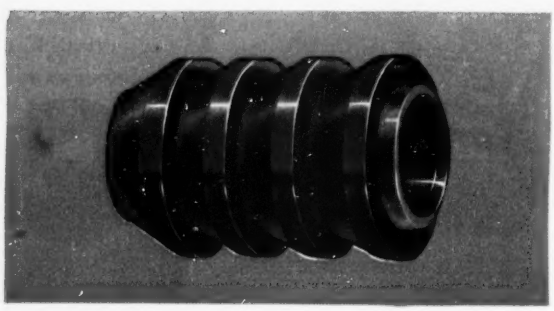
Carbide tips may be used in all the broach teeth or in the finishing teeth only. Continental Tool Works Division of Ex-Cell-O has the technical knowledge to help you; Continental has been designing and building solid carbide and carbide tipped cutting tools since 1930.

For information regarding your application, or for a quotation on carbide tipped broaches, just give your local Ex-Cell-O representative the details or write to Continental in Detroit.

TOP: Carbide tipped sections of a Continental Surface Broach. Note the chip breaker grooves in the semi-finishing teeth and the solid finishing teeth.

MIDDLE: Carbide tipped finishing section of a Continental broach used on a cast iron application.

BOTTOM: Rough cast-iron parts made it necessary to use this carbide tipped broach to obtain satisfactory tool life in cutting half-round slots.



Solid carbide shell used on the finishing end of a High-Speed steel broach to hold size in cast iron parts.

CONTINENTAL TOOL WORKS
CTW
EX-CELL-O CORPORATION

Continental

TOOL WORKS DIVISION OF EX-CELL-O CORPORATION
DETROIT 32, MICHIGAN

53-16

This Week in Metalworking

STEEL

Vol. 132 No. 26 June 29, 1953

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No. 5 of a Management Series: Business Forecasting 47
Industry more than ever needs good economic research. STEEL here gives you hints on how to get good forecasting, together with a prophecy of business conditions for the next six months

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Editorial, Business Staffs—16. Advertising Index—166. Editorial Index available semiannually. STEEL also is indexed by Engineering Index Inc., 29 West 39th St., New York 18.

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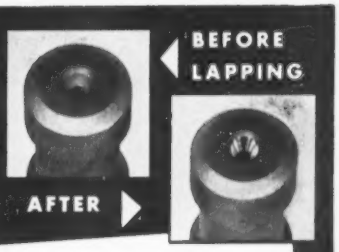
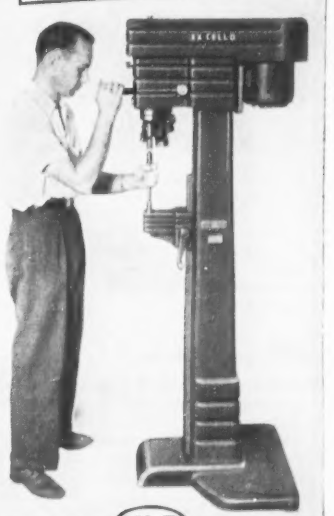


PROBLEM:
To get accurate positioning from female centers.

ANSWER:
LAP THE CENTERS

Ex-Cell-O Center Lapping Machines correct inaccuracies of rough centers, assuring GREATER PRECISION from your present equipment. They are easy to operate. Center Lapping reduces manufacturing costs by minimizing waste from grinding rejection; shortens assembly time because of closer tolerances. All the facts are in Bulletin No. 40271. Write for a copy.



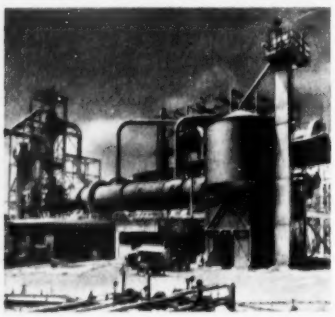
53-28 XLO

CENTER LAPPING MACHINES
BY
EX-CELL-O CORPORATION
DETROIT 32, MICHIGAN

what's NEW in Engineering

The shortage of engineers in all fields, according to three leading universities, will continue until 1955 or 1956. Then, a more balanced supply and demand picture should emerge—thanks to heavy registration of engineering students in the past two years. Meanwhile, one major university reports that in June they had over 4,000 jobs on file—open to 260 graduates.

Microscopic sea plants, called diatomaceae, are getting a lot of attention at Lompoc, California. Deposited geologic ages ago on the floor of what was then an island sea, their fossils are highly valued in many industries for filtering, refining, and other processes. To utilize



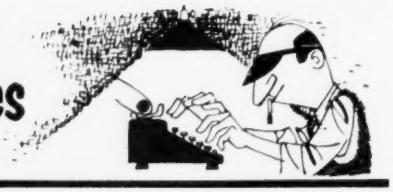
the huge deposits at Lompoc, Kaiser Engineers recently designed and built one of the largest and most modern Dicalite plants in the nation for Great Lakes Carbon Corp. We'll send you a reprint of an article in *Industrial and Engineering Chemistry* which tells the story of Lompoc's diatoms.

Chi-Teh Wang, N. Y. U. aeronautical engineering professor, has written a book on a new approach to elasticity. To be published by McGraw-Hill in August, *Applied Elasticity* presents useful analytical and numerical methods of applying fundamental elasticity theories.

Did you know that Kaiser Engineers is noted for widely diversified engineering talents? Departments include civil, structural, electrical, mechanical, architectural, process and production, mining and geology, metallurgical and chemical—all prepared to work closely together on any project. When you have a problem in engineering, call or write Kaiser Engineers Division of Henry J. Kaiser Company, Kaiser Building, Oakland 12, Calif.

Advertisement

behind the scenes



Congratulations!

Frank G. Japha, Executive Secretary of the National Advertising Agency Network, wrote us last week to report:

> "For its Institutional Advertising which appeared in the pages of STEEL, The Ohio Seamless Tube Company was presented with the Honorable Mention Award in the 1953 Creative competition of the National Advertising Agency Network."

Presentation of the award, we understand, was made at the 22nd Annual Management Conference of the Network, held at the Broadmoor Hotel, Colorado Springs, Colorado. Award certificates and confirming documents were presented to representatives of the Howard Swink Advertising Agency, Inc., of Marion, Ohio, the agency for The Ohio Seamless Tube Company.

That Ohio Seamless was traveling in pretty fast company is shown by the fact that 299 entries were received covering the advertising and public-relations programs of nationally prominent concerns in this country and Canada.

Price Service, Par Excellence

We were explaining to Geraldine, the night editor, how it's possible for us here in Cleveland to know what's going on in all key metalworking markets. It's certainly not done with mirrors.

The fact that STEEL reports a weekly average of 6,149 separate price entries, 65 per cent more than any other publication serving the metalworking market, is the result of system, hard work, and the miracles of telephone, telegraph and teletype.

STEEL's editors and editorial representatives are in day-to-day contact with all major steel producing and consuming areas. Hundreds of steel and metalworking executives are seen, telephoned or telegraphed each day so that every significant price development can be picked up and relayed to the home office in Cleveland within minutes of its discovery.

Weekly price listings are supplemented by shrewd market analyses by editors Bill Rooney and Vance Bell, recognized authorities on steel markets.

Geraldine was impressed. We hope you are, too.

He Sees Red!

Word comes from our London Office that this story is making the rounds in Britain:

An agitator was addressing a crowd of metalworking men. "Comes the era of the common man," he said, "and you will enjoy the pleasures of the rich. You will walk down Park Lane wearing a top hat . . ."

"Excuse me," interrupted a machinist in the audience, "but Hi'd rather 'ave a cloth cap."

". . . or if you prefer it, a cloth cap," went on the speaker. "You'll wear a cutaway coat and pinstripe trousers. . ."

"Excuse me," interposed the machinist again, "but Hi'd be more comfortable in corduroys."

"Very well, corduroys if you insist," continued the annoyed orator. "And you'll ride to work in a Rolls Royce. . ."

"Excuse me," said the Cockney, "but Hi'd rather use my bike."

The agitator left his platform, grabbed the man by the shirt front and shook him roughly. "Listen, you!" he said between his teeth, "come the era of the common man and you'll do bloody well what you're told to do!"

More Daffynitions

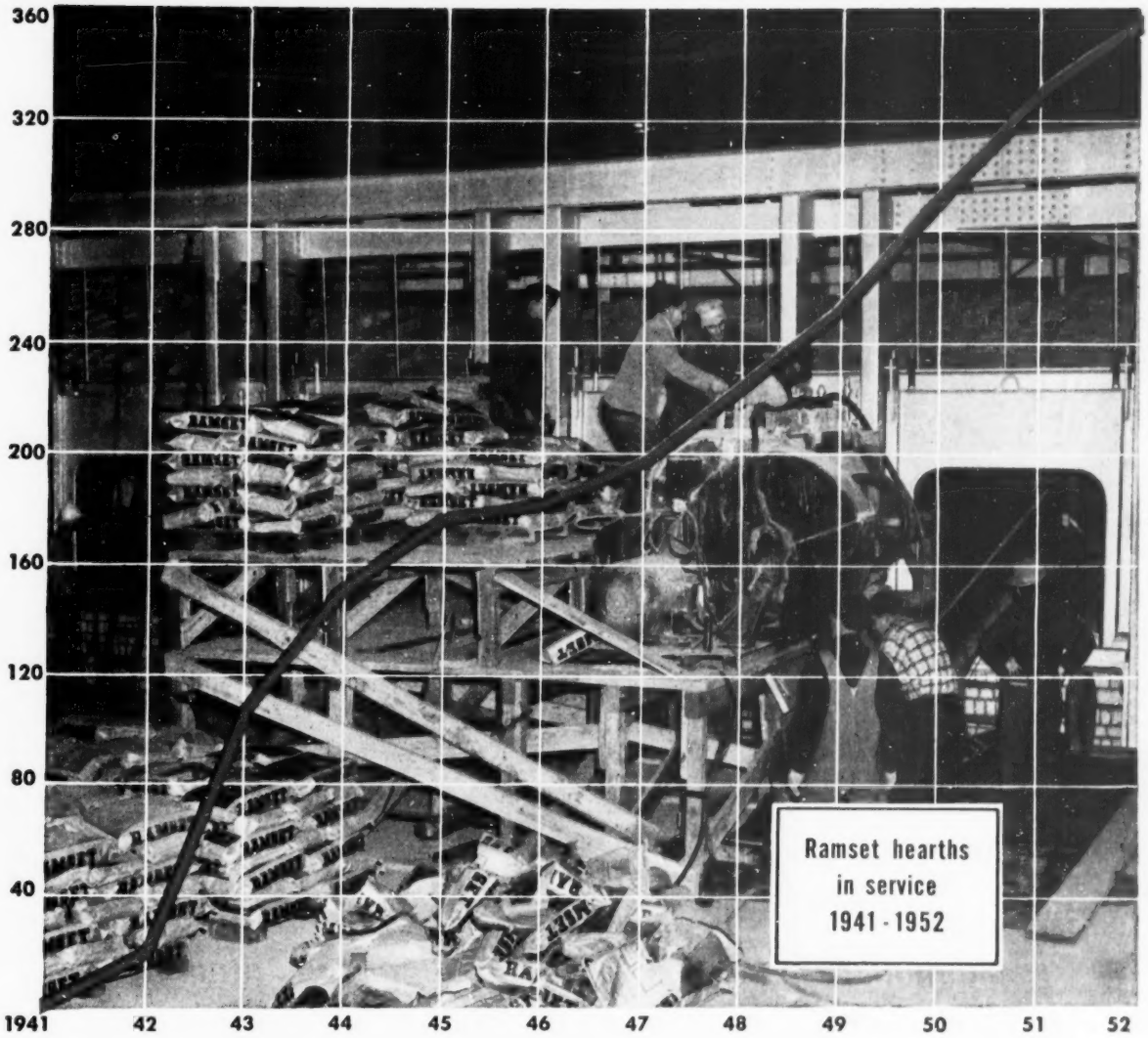
BARS—something which if you go into, you are apt to come out singing a few and maybe get tossed behind.

COMMUNIST—a guy who borrows your pot to cook your goose in.

A HUMAN BEING—a person who laughs himself silly while looking through the family album yet keeps a straight face when he looks in the mirror.

Shrdlu

(Metalworking Outlook—Page 31)



for open hearth bottoms it's Ramset 2 to 1

A MAJORITY of the hearths installed in the new open hearth shops that have been placed in operation over the past several years are of rammed construction. In the new shops using this construction, Ramset installations hold a 2 to 1 advantage over any other magnesia ramming mix.

Basic Refractories pioneered the development of rammed hearth methods. These methods have been continually refined over the intervening years by the practical steelmakers who make up Basic sales and service staff. A few years ago Basic supplemented this advanced technique by making available mixing, conveying and compacting equipment specifically designed for the job.

Thus in selecting Ramset for a hearth installation the steelmaker avails himself of a proven refractory, the most modern of installation methods and equipment as well as the services of Basic personnel who, by background and training, are skilled in the use of granular basic refractories.

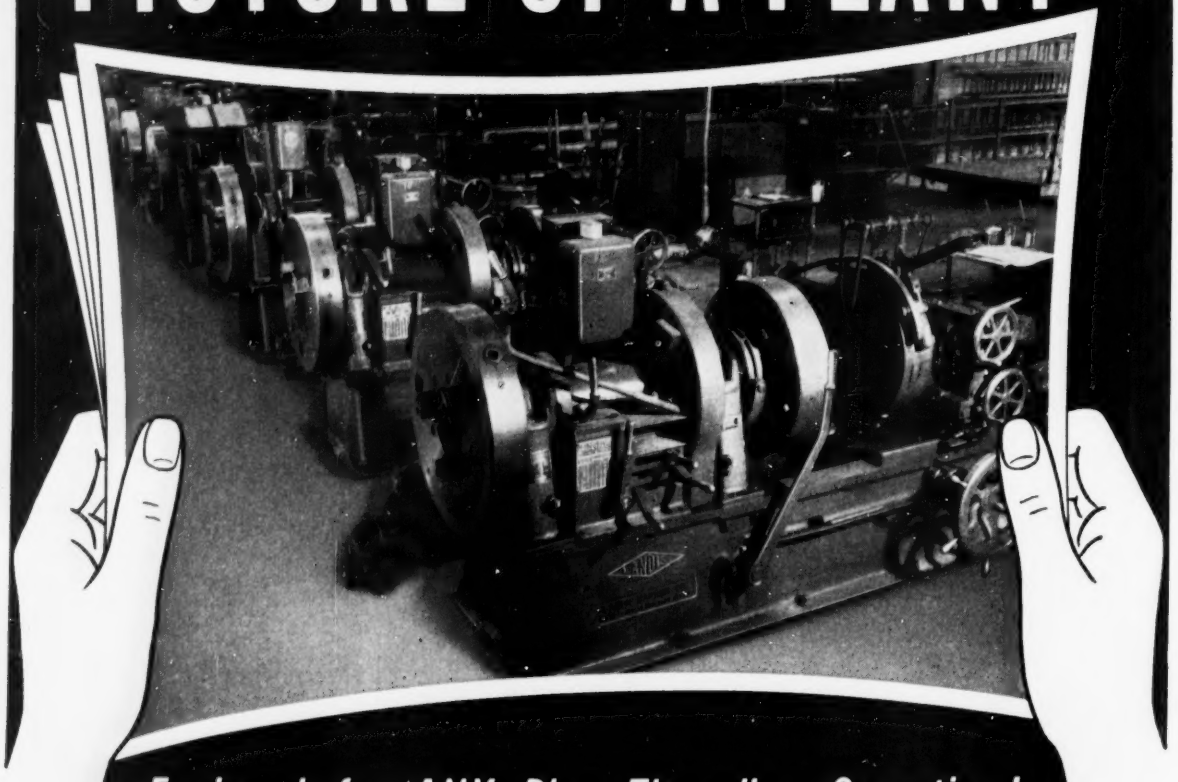
GRANULAR BASIC

REFRACTORIES

Basic Refractories Incorporated • 845 HANNA BUILDING, CLEVELAND 15, OHIO

Exclusive Agents in Canada: REFRACTORIES ENGINEERING AND SUPPLIES, LTD., Hamilton and Montreal

PICTURE OF A PLANT—



Equipped for ANY Pipe Threading Operation!

An installation of eight LANDIS Pipe Threading Machines is shown at Jarcho Brothers' plant in Long Island City. These machines, ranging from 2" to 12" in size, thread, ream, bevel, and cut off pipe varying from ½" to 12" in diameter.

LANDIS Pipe Machines are built for heavy-duty service in continuous production. Quality threads and close concentricity is guaranteed by the sleight floating action of the die head in the T-slot of the crossrail, and by the adjustable grip feature which assures correct alignment of the work in the chucks.

Tool inventories are relatively small since the LANDIS Chasers used will thread all diameters within the range of the die head having the same form, pitch, and taper. These chasers also reduce tool replacement cost for they can be reground and used for most of their length, and can be replaced individually as needed.

LANDIS

THE LANDIS *Machine* CO. 50TH ANNIVERSARY WAYNESBORO PENNSYLVANIA

STEEL PROBLEMS ?

One call gives you ALL the answers!

Delays are costly. When a business is faced with a problem, it is to its advantage to solve it quickly and maintain production rates. Of course—in this age of mass production, specialists, and far-flung operations —that isn't always possible. But Weirton, with a full appreciation of the importance of its customers' problems, has integrated all operations to provide time-saving answers.

At Weirton, key men who may be needed for decisions on prices, quantities, metallurgy, deliveries, or other problems are within quick reach of one another. Sales, laboratory, production, shipping— all departments are "under one roof" to cut delays to a minimum when customers need quick action.

This method of operation was established for your benefit. When you are faced with a steel problem, pick up your phone and get *all* the answers quickly . . . from Weirton.

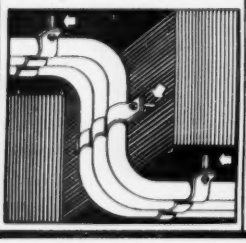
WEIRTON STEEL COMPANY
WEIRTON, WEST VIRGINIA

NATIONAL STEEL CORPORATION

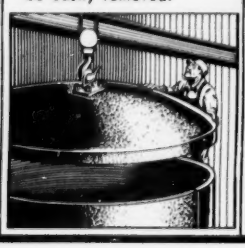
END-WELDS STUDS TO STEEL IN A SPLIT-SECOND
ELIMINATES DRILLING, TAPPING, HAND WELDING
REDUCES MATERIAL HANDLING—TAKES THE TOOL TO THE WORK
SAVES STEEL—ELIMINATES HEAVY BOSSES AND FLANGES
IMPROVES PRODUCT DESIGN AND QUALITY
TAKE ADVANTAGE OF
NELWELD COST SAVINGS
IN STEEL FABRICATION

TO HANG....TO HANDLE....TO HOLD..

Faster installation of brackets or hangers for piping, tubing or conduit.



Fast installation of handling accessories that can be easily removed.



Split second stud welding lowers fabrication costs, improves product.

THE NELSON FASTENING ENGINEER WILL SHOW YOU

... right in your own plant how your production and your products can be improved with this modern fastening method. Your design and production men can actually participate and test the results on your own products.

For full information on Nelweld as applied to steel fabrication, write the Main Office, Lorain, Ohio.

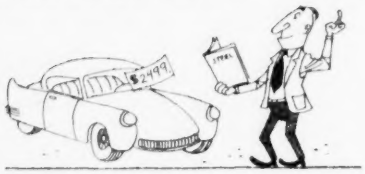
Fasten it Better... at Less Cost, with NELWELD

NELSON STUD WELDING

DIVISION OF GREGORY INDUSTRIES, INC., LORAIN, OHIO

LETTERS TO THE EDITORS

Auto Comparison Proves Worth



We noticed in your Feb. 23 issue (p. 68) a summary of the specifications and costs of various makes of automobiles, and we want to compliment you for this most interesting and valuable page.

We are getting out a handbook for the mining and milling industry and would like to have permission to reprint this particular page.

A. C. Daman
president
Denver Equipment Co.
Denver, Colo.

• *Permission granted.—ED.*

Spending To Cut Costs

This department, which subscribes to STEEL, is very impressed by the article "Buy Your Way to Lower Costs" (May 25, p. 105). May we have 12 copies of this article?

W. A. Kates
Department of Electrical Engineering
Digital Computer Laboratory
Massachusetts Institute of Technology
Cambridge, Mass.

Basic Facts About Steel

Would you be kind enough to tell me how many million tons of steel are produced each year by U. S. steel companies and any other pertinent facts that might be of interest to the public. I like to use this information in public addresses I am privileged to make from time to time.

Thomas Young
Young Electric Sign Co.
Salt Lake City, Utah

• *Steel ingot production in 1952 was slightly more than 93 million net tons. In 1951 steel ingot production was 105 million tons. For 1953 production will run between 105 and 108 million tons; about 58 million tons will be produced by the end of June. Steelmaking capacity has been mounting steadily and now stands at about 120 million net tons per year. As of Jan. 1, 1953, it was 117.5 million net tons. Detailed figures on production and capacity of the basic steel industry are contained on p. 161 of the "1953 Metalworking Facts and Figures," printed as a supplement to our annual issue dated Jan. 5. A copy of this supplement has been sent.—ED.*

The Complete Story

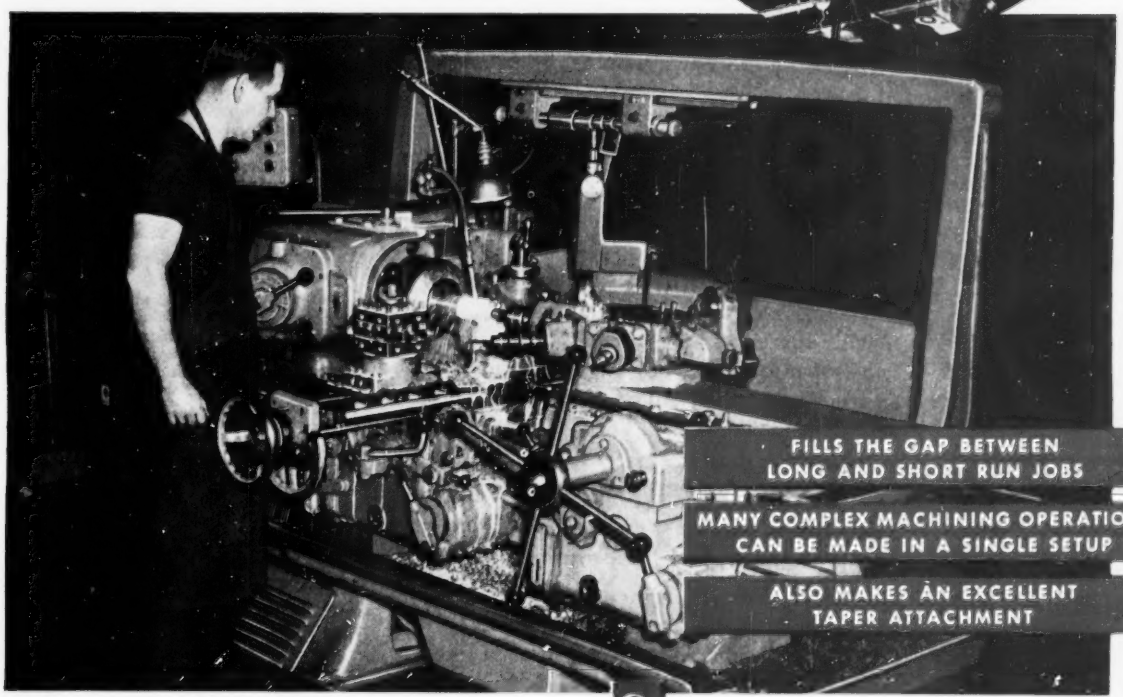
In another magazine we noticed a short article on a better method of treating waste pickle liquors used in the steel industry. Did not STEEL publish a complete article on the process mentioned

Please turn to page 12

NEW HYDRAULIC TRACING ATTACHMENT

for J&L turret lathes*

Will reduce your costs —direct and indirect— by combining in a single machine all the advantages of TRACING for contour turning, boring or facing operations, with the advantages of multiple tooling and the many other time saving, cost saving features of J & L Universal Turret Lathes.



FILLS THE GAP BETWEEN LONG AND SHORT RUN JOBS

MANY COMPLEX MACHINING OPERATIONS CAN BE MADE IN A SINGLE SETUP

ALSO MAKES AN EXCELLENT TAPER ATTACHMENT

*RAM TYPE or No. 7 SADDLE TYPE

P.S. This attachment can be purchased with new machines or installed in the field on machines now in service. Write for descriptive leaflet giving complete specifications.

JONES & LAMSON

Machine Tool Craftsmen Since 1835

JONES & LAMSON MACHINE CO., 517 Clinton St., Dept. 710, Springfield, Vt., U.S.A. J&L TURRET LATHE DIV.

CAMCAR
COLD-FLOW

TYPE F self-tapping screws

U. S. Patents
2165009
2165010
2165011
2161610
2161611

Monthly Stock List
Mailed on Request . . .

THREAD CUTTING SCREWS
AIRCRAFT SCREWS
PHILLIPS
SEMS
SHEET METAL
SPECIALS

Camcar specialists have added the superior quality features of Cold-Flow processing to the time and cost-saving design of Type F Self-Tapping Screws.

The application of Cold-Flow techniques produces accuracy, tensile strength and clean dimensions to supply a stronger fastening through free-cutting, snug-fitting penetration.

Cold-Flow quality parts for Metal and Plastic Fastening applications are now available for your production with the same prompt service supplied on all Camcar Parts.

Telephone 5-9451 • Teletype RK 8653

CAMCAR SCREW & MFG., CORP.
603 Eighteenth Avenue • Rockford, Illinois

"PRODUCTION-DESIGNED FOR YOUR ASSEMBLY LINE"

LETTERS

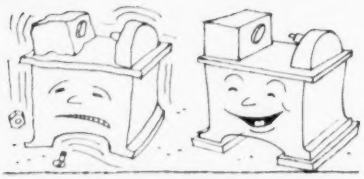
Concluded from page 10

above? Can we obtain a copy of that particular issue.

B. Naumes
National Aluminate Corp.
Chicago

• *The article you want is "Reuse Waste Pickling Liquors," which appeared on p. 130 of the Apr. 27 issue. A copy is on its way.—ED.*

Vibration Can Be Controlled



We were very much impressed by the article "Mounting Keeps Vibration in Its Place" (May 18, p. 90) and we would like to obtain reprints of this article. Would you please send us prices on quantities of two, three, four and five thousand copies.

Erwin E. Schowengerdt
Market Research
Barry Corp.
Watertown, Mass.

• *STEEL's Reprint Department has sent full details.—ED.*

Extending the Price Index

Since September, 1952, I have been interested in maintaining the weekly index of finished steel prices on the chart supplied by STEEL (Sept. 8, opp. p. 28). This chart runs out at the end of June and I am wondering if you intend to make another printing. If you do so, I would appreciate having a copy.

Willis R. Miller
purchasing agent
Tomkins-Johnson Co.
Jackson, Mich.

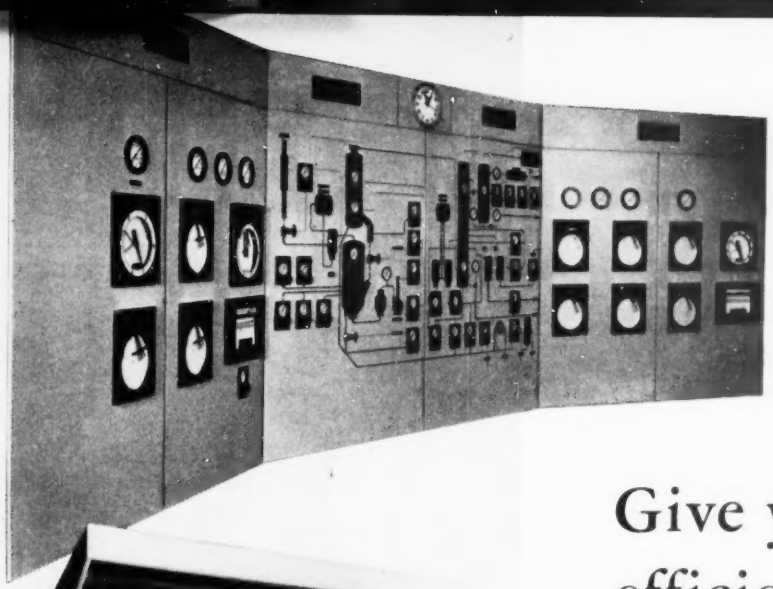
• *We are not intending to print chart extensions for the finished steel price index of the Bureau of Labor Statistics. However, we are sending along a simple extension for your use with our compliments. The Bureau of Labor Statistics plans to broaden the base of its index this summer, computing it on the basis of forty-two steel forms compared with the present twenty-eight forms. This should make a good index even better. STEEL will carry the announcement when the new broader base is put into effect. —ED.*

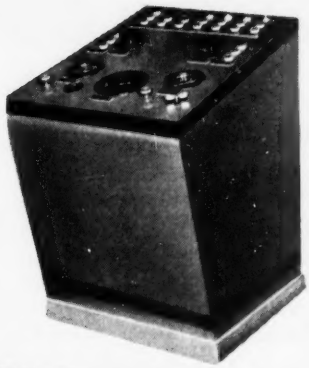
What's New in Cold Extrusion?

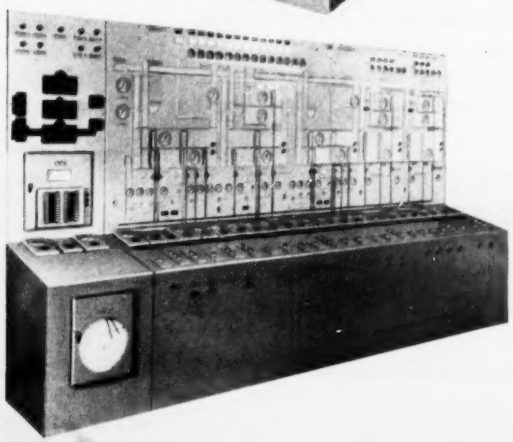
We are looking into the possibility of cold extrusion for some of the parts we manufacture. Do you have any information relative to cold extrusion of alloy steels? Also, do you know of any sources presently cold extruding alloy steel parts?

F. B. Lewandowski
Research Development Division
Timken-Detroit Axle Co.
Detroit

• *We are preparing a staff report on the present status of cold extrusion for publication in STEEL July 27 which we believe will answer your questions. We'll be glad to send you tear sheets of the article as soon as it appears.—ED.*







Give your process efficient centralized control *with* **Honeywell Panels**

THE CONTROL centers of your plant can contribute important improvements in operating efficiency, ease of supervision, labor savings. To achieve the full potential benefits of this modern control concept, it will pay you to specify Honeywell custom-engineered panels. The choice of leading manufacturing and consulting firms, Honeywell panels are made in a wide variety of types . . . a few of which are shown here.

Every Honeywell panel is custom-designed for its individual application, by specialists who are thoroughly experienced in all phases of industrial process control. However simple or complex your process requirements may be, Honeywell engineers can work out an efficient panel design. They combine attractive appearance with functional arrangement of all components—to produce a layout that affords maximum convenience, minimum fatigue, simple manipulation and easier training for operators.

Your Honeywell panel reaches your plant in whatever form best suits your needs. It can be completely preassembled and shipped with all instruments, controls and accessories fully wired, piped and tested. Or, if you prefer, panels and instruments can be shipped separately and then assembled at the site by qualified Honeywell installers, or by your own mechanics . . . if you like, under our supervision.

Your nearby Honeywell sales engineer will welcome the opportunity to discuss centralized instrumentation for your plant . . . and he's as near as your phone.

MINNEAPOLIS-HONEYWELL REGULATOR CO., *Industrial Division*, 4462 Wayne Ave., Philadelphia 44, Pa.

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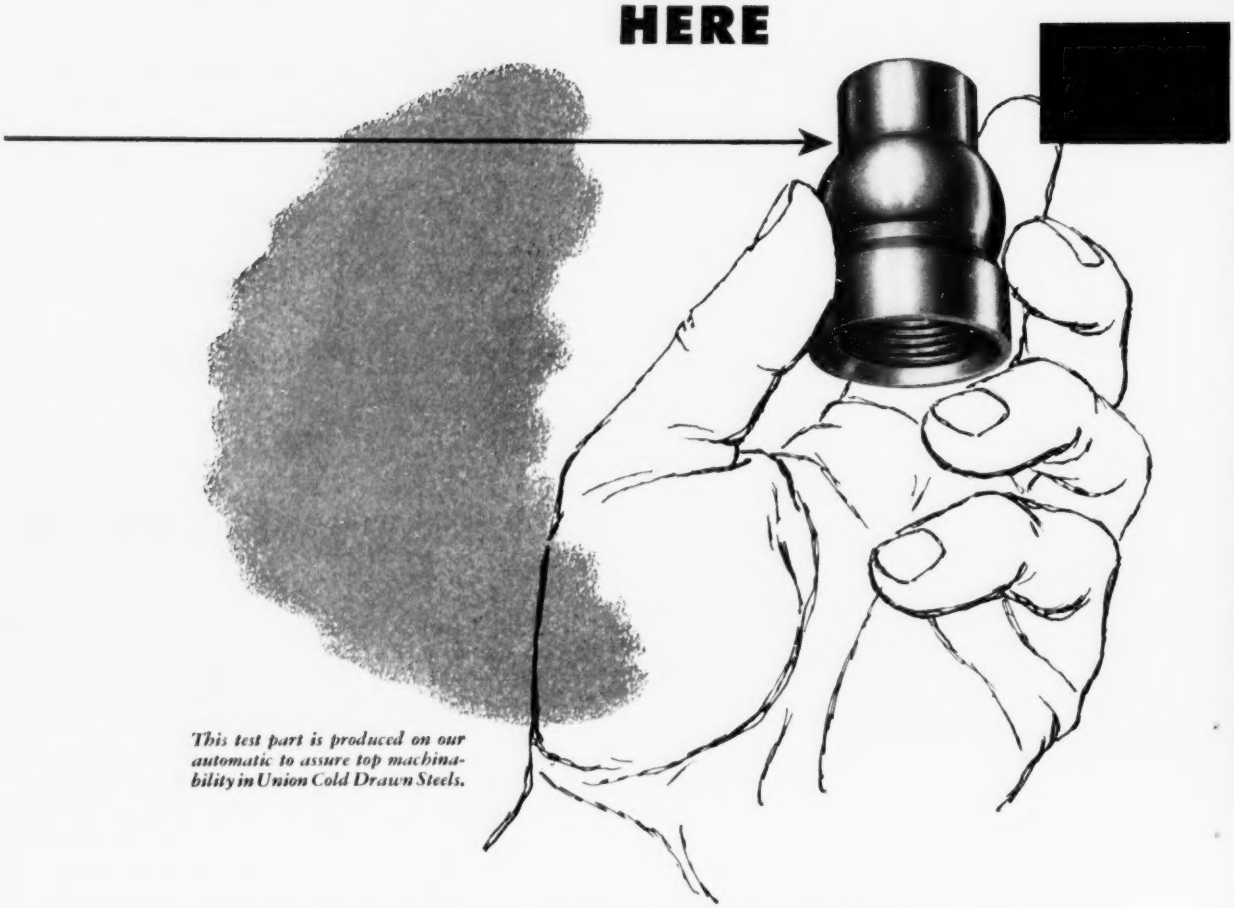
BROWN INSTRUMENTS

First in Controls

PRE-TESTED MACHINABILITY HERE



This test part is produced on our automatic to assure top machinability in Union Cold Drawn Steels.

What we learn about Union Cold Drawn Steels on our automatic screw machine at Massillon, Ohio, helps you make a better product at a better profit when you cut those steels on *your* automatics.

That's why Union Drawn's "Pre-Tested Machinability" idea keeps set-up men and operators happy when they're running Union Cold Drawn Stock . . . they get set-up sooner, with fewer headaches, using the best combinations of feed and speed. There are more parts in the shipping pan, fewer parts in the reject box. Profits stay up, costs stay down.

And it's all because we have an automatic! It runs all day long, doing the six most common operations on the useless part above. Useless to everybody except to us at Union Drawn . . . and to you who use Union Cold Drawn Stock.

Our Union Drawn Field Metallurgists would welcome the chance to talk with your set-up man, swap hints on tool angles, heavier feeds, faster speeds. When shall we call?

REPUBLIC STEEL CORPORATION
Union Drawn Steel Division • Massillon, Ohio
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REPUBLIC STEEL

6 HELPFUL MANUALS

filled with how-to-do-it information and data to help you use Union Cold Drawn Steels. Write for "Union Drawn Pocket Library."

Republic UNION® COLD DRAWN STEELS

Free-Machining Bessemer, Alloy and Enduro Stainless Steels

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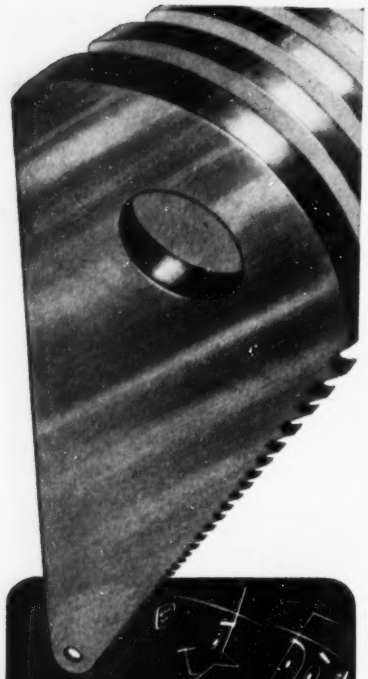

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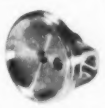
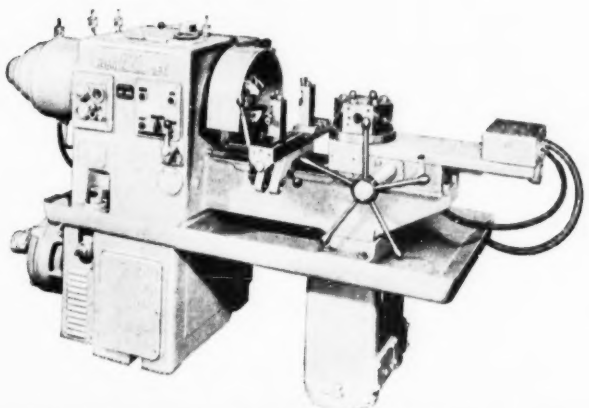
PRODUCTION RECORD

PART	PART NAME	OPERATIONS	PRODUCTION INCREASE
	¾" Clamp Socket	Turn, Face, Counterbore, Chamfer, Thread	136.4%
		Face, Round, Turn	226.3%
	Tap Body	Drill (2), Face (2), Tap (1), Chamfer (2)	47.5%
		Drill, Turn, Thread	45.9%
	¼" Air Cock Body	Turn, Drill, Thread, Chamfer	26.6%
	Bottom Flange	Drill, Turn, Face, Neck, Thread, Chamfer	37.0%
	Air Distributer Body	Drill, Tap, Chamfer	59.7%
	Water Faucet Body	Drill, Neck, Recess Tap, Thread, Chamfer, Seat	49.4%
		Drill, Form, Face	45.4%
		Drill, Face, Form Tap, Chamfer	50.9%
	Air Regulator Body	Drill, Recess, Turn, Face, Thread	86.2%
		Drill, Tap	26.6%
	Solid Tap Nut	Counterbore, Tap	70.3%
	Tap Bottom Body	Drill, Face, Counterbore, Tap	28.0%



WARNER & SWASEY 16" ELECTRO-CYCLE TURRET LATHE

1½" Bar Capacity—16⅞" Chucking Swing

By presetting the Electro-Cycle "drum control", spindle speed, starts and stops, spindle direction, and reverses for each turret face are *automatically* controlled. Operator zips through precision operations, without tiring himself on time-consuming manual operations.

THESE PARTS are typical of the many different jobs machined in one brass shop on Warner & Swasey Electro-Cycle Turret Lathes.

Ranging from 2 to 6 operations, in lots from 100 to 10,000, each part is machined faster—*more profitably*—on the easier operating Electro-Cycles. The chart shows the exact results.

Electro-Cycles have made equally as impressive records in hundreds of other machine shops, turning non-ferrous metals and plastics. A new, improved 2-jaw air-operated indexing chuck now offers you even greater savings. Ask our Field Representative to show you how Electro-Cycles can speed production and build profits for you.

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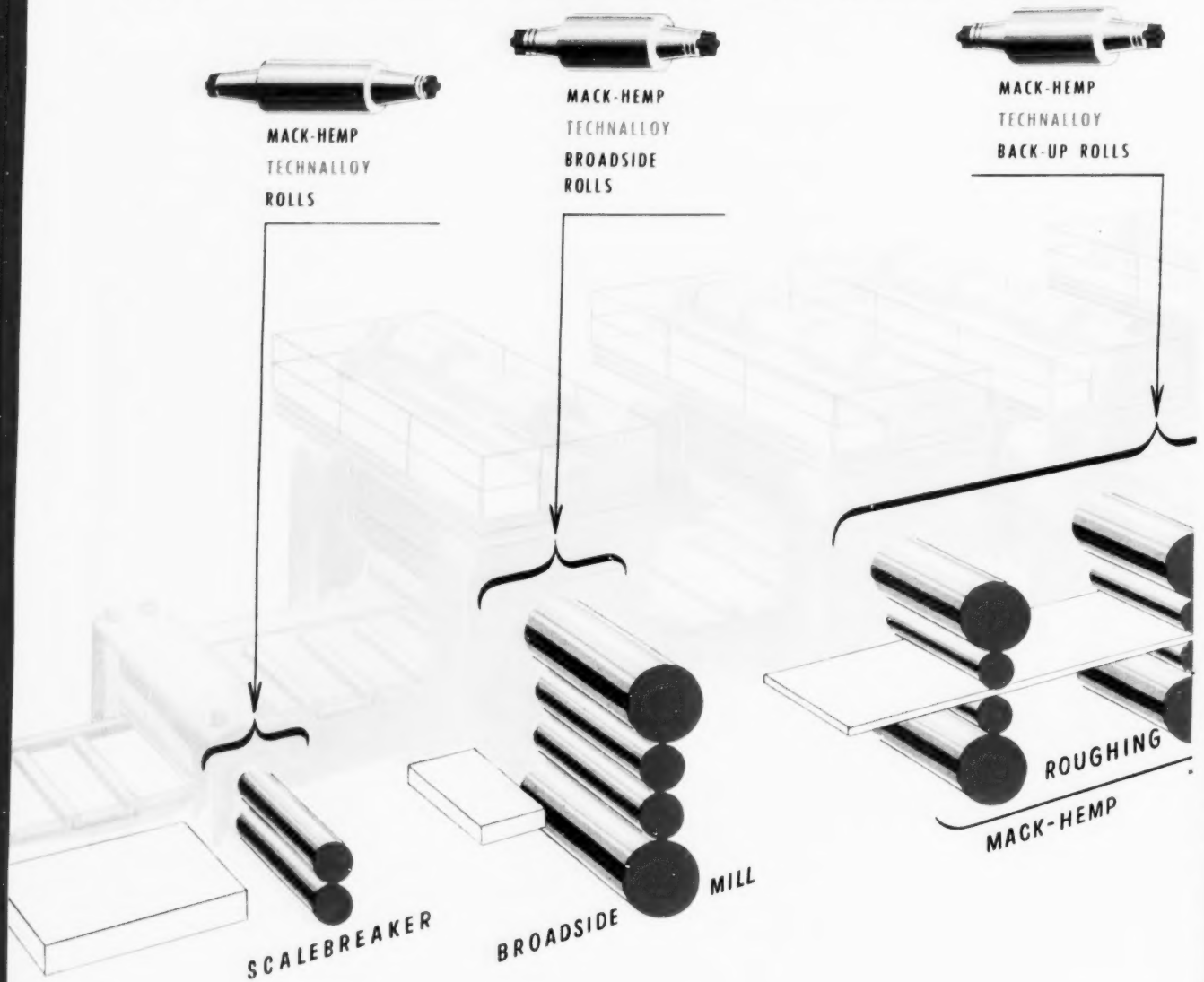
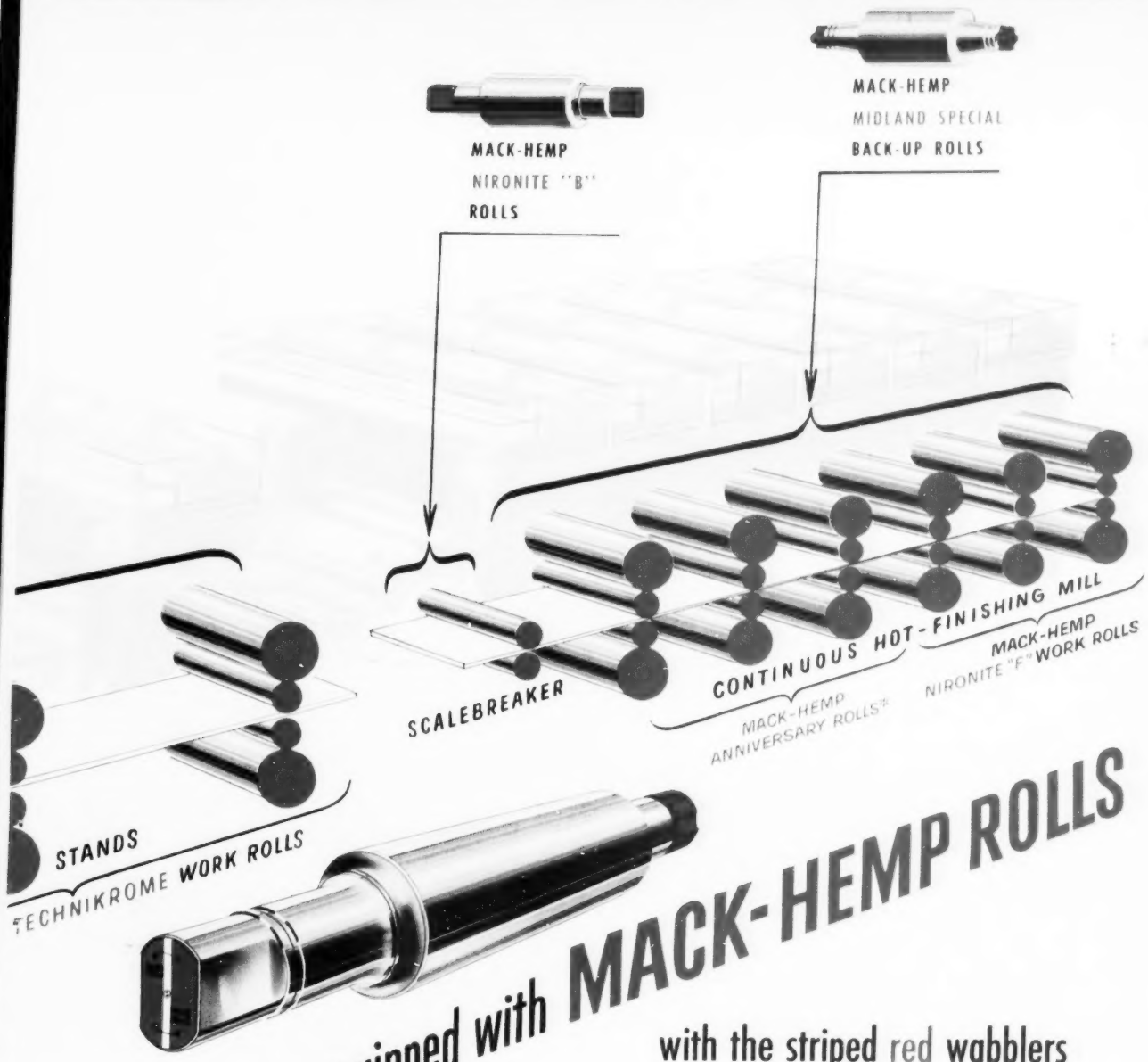
YOU CAN PRODUCE IT BETTER, FASTER, FOR LESS WITH WARNER & SWASEY MACHINE TOOLS, TEXTILE MACHINERY, CONSTRUCTION MACHINERY

1953- Mack-Hemp's 150 Years of continuous product improvement



*Anniversary Roll is named in recognition of
MACK-HEMP's 150 Years of service
to the metals industry.

hot strip mill production rolls ahead when



all stands are equipped with MACK-HEMP ROLLS

with the striped red wabblers

Put Technikrome work rolls in the roughing stands, Special Nironite "F" rolls in intermediate stands, Anniversary Rolls in the first three finishing stands, and regular Nironite "F" rolls in the rest of the finishers; back them up with Technalloy or Midland Special rolls, and watch the excellent production records these Mack-Hemp Rolls make for you.

The superior performance records of Mack-Hemp Rolls *with the striped red wabblers* reflect the help that your roll designers and mill operators have given Mack-Hemp metallurgists.

Because we are always working to improve our Rolls *with the striped red wabblers*, it pays to keep your eye on what's new and different at Mack-Hemp.

MACKINTOSH-HEMPHILL COMPANY

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Makers of the Rolls with the Striped Red Wabblers

MACKINTOSH-HEMPHILL PRODUCTS INCLUDE: rolls . . . steel and special alloy castings . . . completely integrated strip mills . . . heavy duty engine lathes . . . Mackintosh-Hemphill rotary straighteners . . . improved Johnston patented corrugated cinder pots and slag-handling equipment . . . shape straighteners . . . end-thrust bearings . . . shears . . . levellers

Ceramic Coating of Jet Engine Parts

another of the precision-processing operations with *the Productive Flames of* GAS

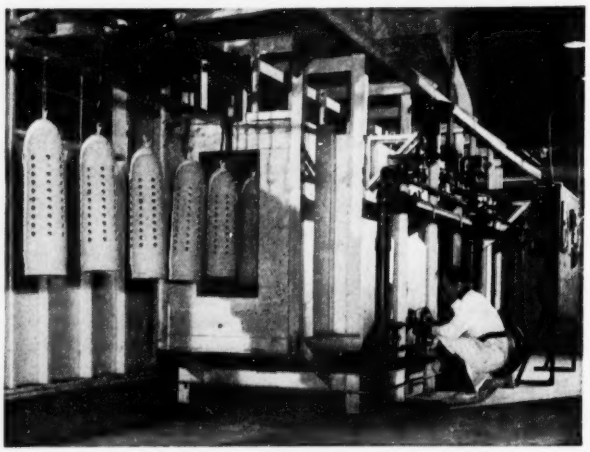
at SOLAR AIRCRAFT CO., San Diego, California

Solaramic, a new family of ceramic coatings, is used in Solar Aircraft Company's Solaramic pilot plant. The highly refractory materials used to make Solaramic frits are fused in a Gas furnace which maintains carefully controlled temperature to 2500°F.

Applied to jet engine parts, this new coating protects pieces against corrosion and oxidation, instead of acting only as an insulating medium. In addition, this GAS-fired ceramic coating:

- ★ Reduces hot spots on parts
- ★ Minimizes cracking and warping
- ★ Increases fatigue life
- ★ Improves gall resistance under high-temperature conditions

Parts are sprayed with Solaramic and placed in a GAS-fired semi-muffle oven furnace where the temperature is precisely and automatically controlled. Firing temperatures range between 1700 and 2000°F, assuring dependable adherence of the coating to the metal.



Continuous GAS-fired Furnace in use in conveyorized production line for Solaramic Jet parts.

The Productive Flames of GAS are utilized in this industrial process because GAS:

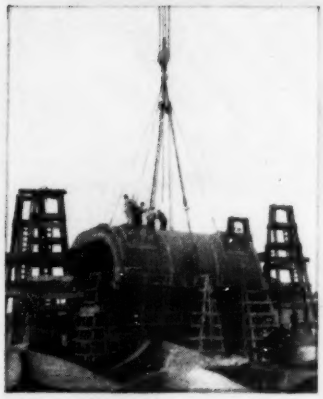
1. Allows rapid temperature recovery after charging
2. Permits exact control of temperatures, *automatically*
3. Permits easy adjustment of furnace atmosphere as required

GAS is the modern fuel for all industry, because GAS is versatile in application, clean, and can be automatically controlled to provide exact temperatures required. Modern Industrial Gas Equipment fits production-line techniques. For the facts, see your Gas Company Representative.

MORE AND MORE... THE TREND IS TO GAS

AMERICAN GAS ASSOCIATION
420 LEXINGTON AVENUE • NEW YORK 17, N.Y.

Here a Cincinnati Press Brake saves 3 ways...



Built at The Maryland Drydock Company, for the Westinghouse Electric Corporation these giant condensers are some of the largest ever constructed.

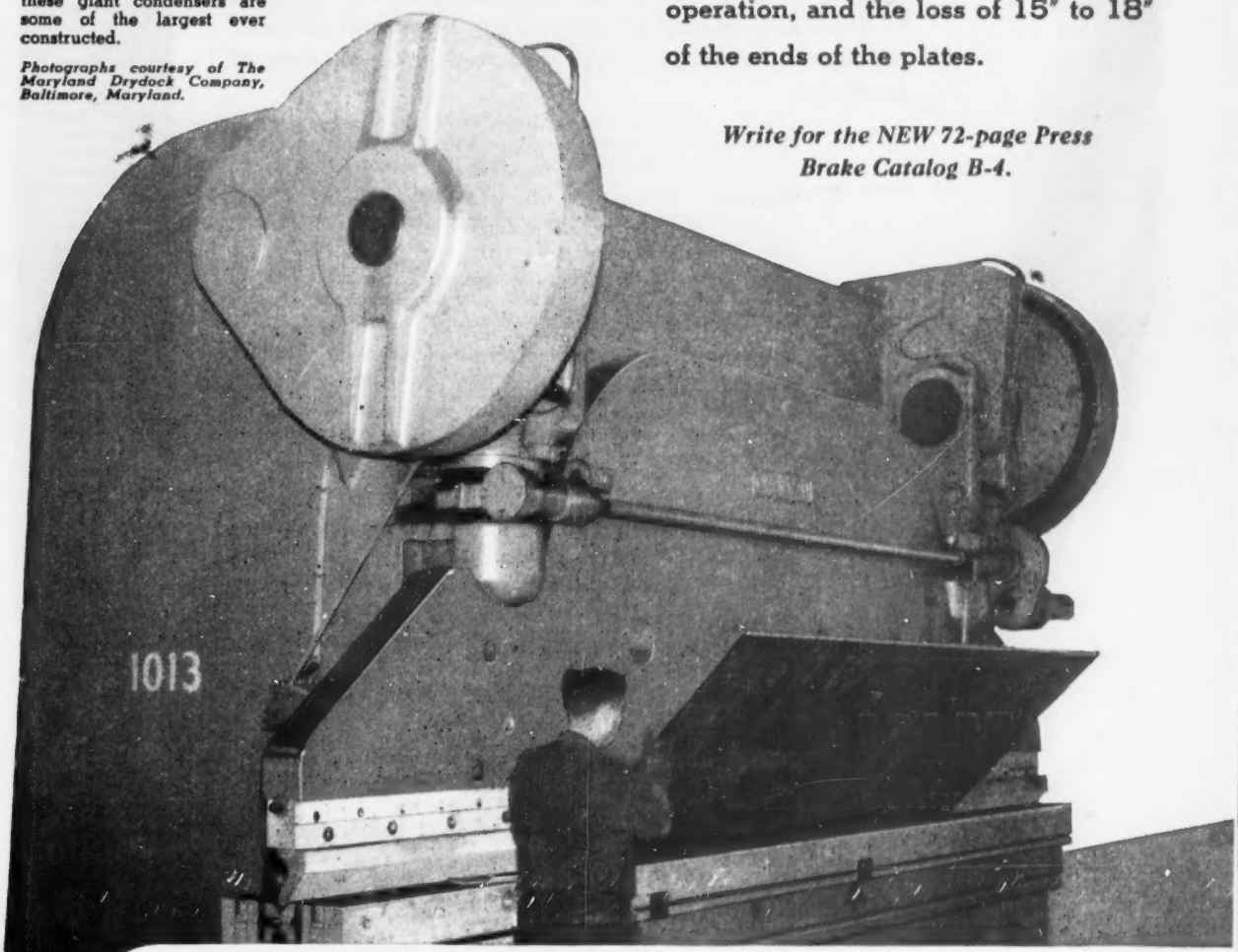
Photographs courtesy of The Maryland Drydock Company, Baltimore, Maryland.

- TIME
- NUMBER OF OPERATIONS
- MATERIAL

Crimping plate up to 3″ thicknesses has cut roll-forming time in half at The Maryland Drydock Company.

The press brake crimps the ends of the plates with special dies, and has eliminated both the costly burning operation, and the loss of 15″ to 18″ of the ends of the plates.

Write for the NEW 72-page Press Brake Catalog B-4.



THE CINCINNATI SHAPER CO.

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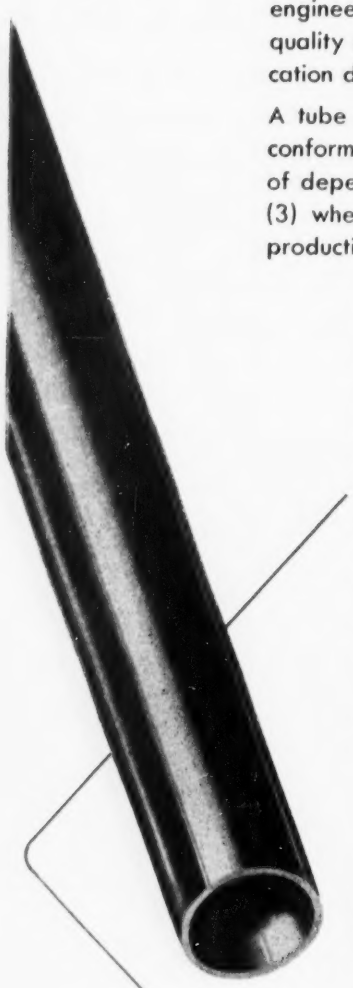
it takes "Tube-manship"



By "tube-manship" we mean the combination of research and engineering, with long tube-making experience to produce the quality of tube that will meet all requirements which its application demands.

A tube possesses "tube-manship" (1) when all its dimensions conform consistently to highest standards, (2) when it is made of dependable metals and alloys according to best practices, (3) when it has passed rigid inspection during all steps of production.

Plain tube—in copper and copper base alloys, aluminum and electric-welded steel for wide number of commercial applications.

Capilator*—the capillary tube for restriction purposes—made of copper in sizes .026" to .080" I.D. In straight lengths only, 2½" to 21'.

Fabricated tubular parts—encompassing a great variety of shapes and forms, which offer many advantages in economy and operating efficiencies.

Wolverine Trufin*—the integral finned tube—made of copper, copper base alloys, aluminum and bi-metal.

Spun End Process†—an exclusive Wolverine development designed to form ends of tube (completely or partially closed) to affect economies in tubular parts.

"Tube-manship" is found in all Wolverine products. You can always feel confident in purchasing and using any Wolverine product. It proves its "tube-manship" in the long, dependable service it will give you.

Send for our latest catalog sheet giving further information

Wolverine Welcomes Your Tubing Problems

WOLVERINE TUBE DIVISION

of CALUMET & HECLA, INC.

Manufacturers of Tubing Exclusively

1439 CENTRAL AVENUE • DETROIT 9, MICHIGAN

Plants in Detroit, Mich. & Decatur, Ala. *Sales offices in Principal Cities*

ESTABLISHED 1916

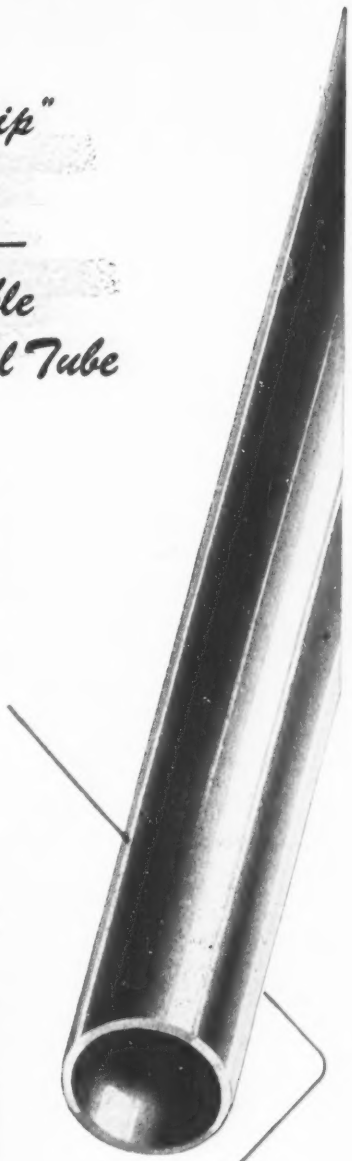
Wolverine Trufin and the Wolverine Spun End Process available in Canada through the Unifin Tube Co., London, Ontario.

*REG. U. S. PAT. OFF.

†A PATENTED PROCESS RE. 22485

to make good tube

The Wolverine "Tube-manship" upon which you rely for top-quality nonferrous tube— now assures you of dependable Wolverine Electric-Welded Steel Tube



The combination of Wolverine engineering and thirty-seven years of tube-production experience assures you of top-quality tube that meets your most exacting demands. Rigid quality-control measures (standard everyday practice at Wolverine) assure design and product engineers of uniform diameter, concentricity, weight and other structural advantages. All these mean improved product efficiency at minimum production cost.

Wolverine produces electric-welded steel tubing in sizes ranging from: ¼" to 3" O.D.

Analyses: SAE 1010, SAE 1015, SAE 1020, SAE 1025, SAE 1030.

In addition to manufacturing top-quality tubing of copper, copper base alloys, aluminum, bi-metal and electric-welded steel—Wolverine can also help you with such matters as the selection of the tube and alloy that will best meet your particular operation conditions. Wolverine's Customer Engineering Service is always ready to answer questions concerning choice of alloys, size, and temper for a given use, or help you with problems dealing with corrosion, heat transfer or tube fabrication.

ESTABLISHED 1916

WOLVERINE TUBE DIVISION

of CALUMET & HECLA, INC.

Manufacturers of Tubing Exclusively

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Plants in Detroit, Mich. & Decatur, Ala. *Sales offices in Principal Cities*

New Buy-word for Top Value

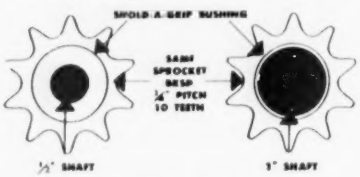
SHOLD

FROM STOCK!

Typical design (above) of SHOLD-A-GRIP Bushing and Sprocket with minimum number of teeth.
Typical design (below) of SHOLD-A-GRIP Bushing and Sprocket with maximum number of teeth.

FIT SHAFTS
½" to 2½" by 16ths

SHOLD-A-GRIP Sprockets of any commonly used pitch, ½" to 1¼", can be interchanged on an extended range of shaft sizes. SHOLD-A-GRIP design adds many smaller sprocket sizes to the interchangeable class.



Example: Sprocket BKSD, ¾" pitch, 10 teeth, can be used on 9 different shaft sizes, any size from ½" to 1" by 16ths, by inserting the correct size SHOLD-A-GRIP Bushing.

Engineered *originally* and *specifically* for Sprocket drives, SHOLD-A-GRIP Bushings are *not* an "adapted" design. Compare . . . see why SHOLD-A-GRIP means top efficiency, lowest maintenance costs.

GEARS • CHAIN and SPROCKETS • RATIOMOTORS • REDUCTORS • BOST-BRONZ Oil-Impregnated BEARINGS • PILLOW BLOCKS •

in Sprocket Assemblies . . . ask for

-A-GRIP®

Interchangeable Tapered BUSHINGS and SPROCKETS

You'll be Sure to get . . .

Correct Taper

FOR SLIP-PROOF GRIP

In SHOLD-A-GRIP Bushings and Sprockets, you get a taper proved by exhaustive overload tests to be the optimum for slip-proof grip. When screws are tightened the bushing grips both sprocket and shaft with maximum holding power, even on shafts which vary from true diameter.

Correct Taper

FOR EASY REMOVAL

Correct taper saves time and trouble in removal. Cap screws are removed, then two screws are turned into the two threaded holes in bushing flange. Tightening screws releases bushing—quickly, easily.

Matched Tapers

AVOID "ROCKING" FIT

All Bushing and Sprocket tapers are machined with integrated and matched tooling, to avoid possible variation from random production. There is no risk of a "rocking" fit. SHOLD-A-GRIP gives you fast, free interchangeability, over the entire size range.

High-strength Design

BY BOSTON Gear EXPERTS

Because of the unique, patented SHOLD-A-GRIP construction, holes for screws are in the shoulder. There are no weakening holes in the sprocket itself. BOSTON Gear quality throughout assures longer service life on your toughest drives.

Completely engineered and manufactured by BOSTON Gear . . . for 75 years the leading specialists in Stock Gear and Sprocket design.

Complete information on SHOLD-A-GRIP Bushings and Sprockets is available from your Boston *Gear* Distributor, or write Boston Gear Works, 60 Hayward St., Quincy 71, Mass.

ASK YOUR NEARBY

BOSTON Gear® DISTRIBUTOR

UNIVERSAL JOINTS • COUPLINGS • BALL BEARINGS • OVER 5000 STOCK ITEMS

TOPS IN QUALITY..

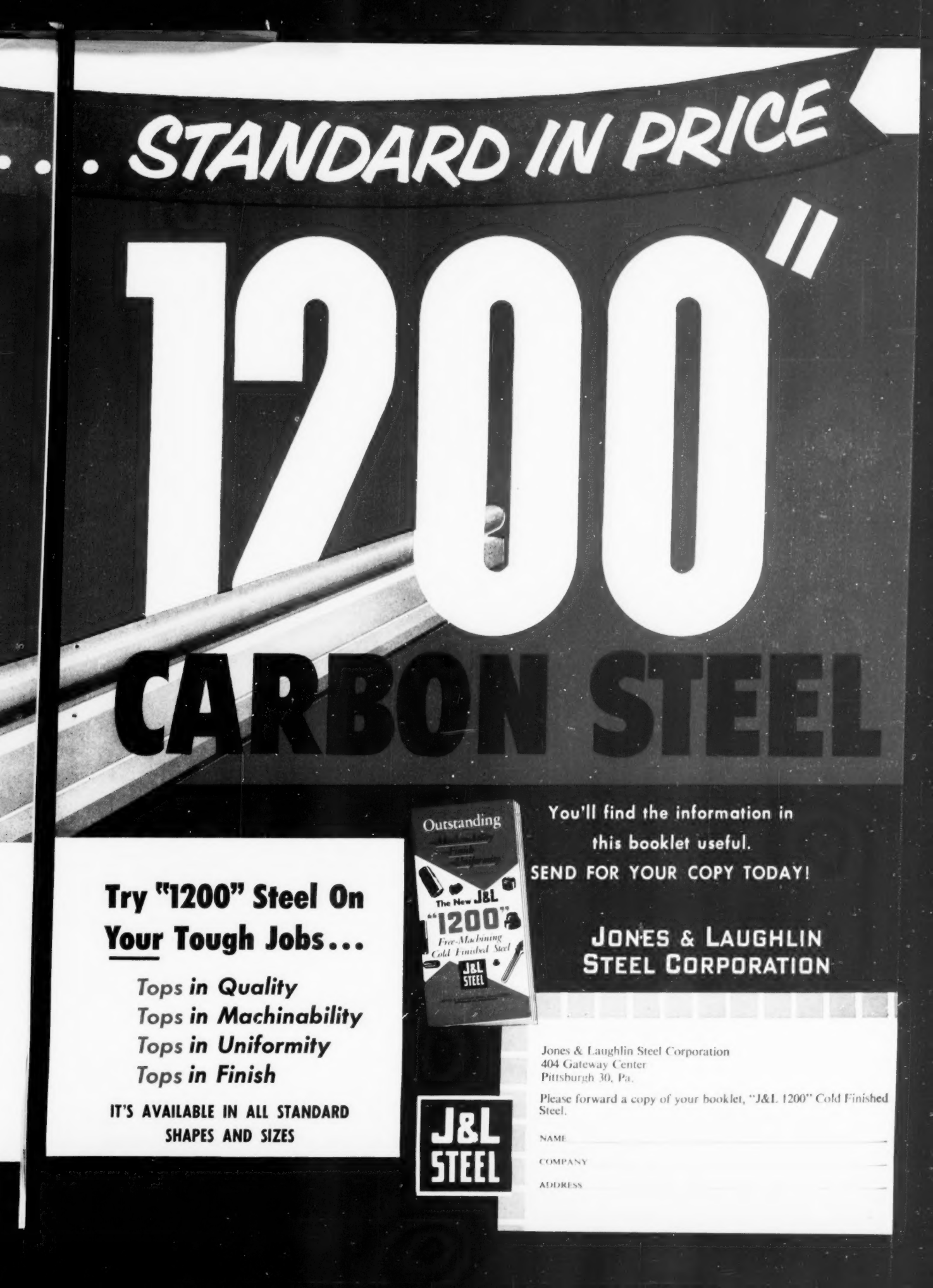
The NEW "J&L COLD FINISHED

UNSURPASSED

AMONG FREE-MACHINING STEELS

"J&L 1200" Steel, most recent of the corporation's many Cold Finished firsts has already proved itself in Screw Machine Shops throughout the industry. More and more evidence of the outstanding performance of this new free-machining steel is constantly being furnished by reports from the growing number of machine shops who regularly specify "J&L 1200" Cold Finished Steel for their production runs.

"J&L's 1200" series meets equivalent compositions published by the American Iron & Steel Institute, the Society of Automotive Engineers, and Federal Specifications QQS-663.



Try "1200" Steel On Your Tough Jobs...

Tops in Quality
Tops in Machinability
Tops in Uniformity
Tops in Finish

IT'S AVAILABLE IN ALL STANDARD SHAPES AND SIZES

J&L STEEL

You'll find the information in this booklet useful.
SEND FOR YOUR COPY TODAY!

JONES & LAUGHLIN STEEL CORPORATION

Jones & Laughlin Steel Corporation
404 Gateway Center
Pittsburgh 30, Pa.

Please forward a copy of your booklet, "J&L 1200" Cold Finished Steel.

NAME _____

COMPANY _____

ADDRESS _____

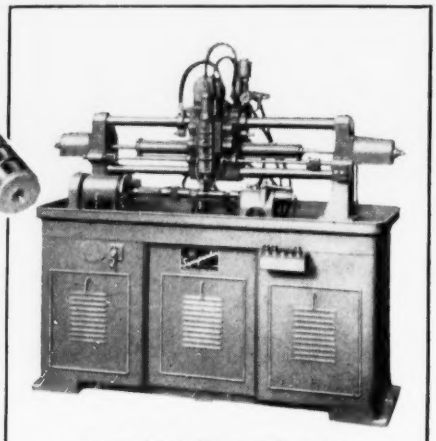
SUPERFINISH
MAKES THESE PARTS BETTER
. . . 5 WAYS!

You're looking at a group of parts that go into the Gisholt Fastermatic Automatic Turret Lathe. Super-smoothness of working surfaces of these parts is vital to the precision and long life of the machine. So all these parts are Superfinished—including overhead pilot bars, piston rods, hydraulic control valves, thrust collars, turret locating pins and rollers.

The benefits are many:

1. Superfinishing removes all chatter marks, grinder flats, "smear metal" and other surface irregularities.
2. It assures more nearly perfect geometrical forms. This means more uniform bearing surfaces. They therefore last far longer.
3. Superfinishing simplifies assembly because the surfaces are down to true "base metal"...and no break-in tolerances are required.
4. Superfinishing simplifies grinding and reduces spoilage.
5. The greater degree of smoothness makes the parts easier operating, reduces wear.

The net result of Superfinish here—as it can be in your case—is parts that perform better, last longer and cost far less in the long run. See how Superfinish can solve your problems of both wear and surface roughness. Get your copy of "Wear and Surface Finish," and complete textbook covering all phases of Superfinish.



Model 52-A General-Purpose Superfinisher

THE GISHOLT ROUND TABLE

represents the collective experience of specialists in machining, surface-finishing and balancing of round and partly round parts. Your problems are welcomed here.

GISHOLT MACHINE COMPANY Madison 10, Wisconsin

TURRET LATHES • AUTOMATIC LATHES • SUPERFINISHERS • BALANCERS • SPECIAL MACHINES

4 HIGH, 5 STAND TANDEM

HOT ALUMINUM MILL

Designed and Built by

UNITED

UNITED *can serve you no matter where in the world you are.*

ENGINEERING AND FOUNDRY COMPANY

PITTSBURGH, PENNSYLVANIA

Plants at PITTSBURGH • VANDERGRIFT • NEW CASTLE
YOUNGSTOWN • CANTON

Subsidiaries ADAMSON UNITED COMPANY, AKRON, OHIO
LOBDELL UNITED COMPANY, WILMINGTON, DELAWARE
STEDMAN FOUNDRY AND MACHINE CO., INC., AURORA, INDIANA

Designers and Builders of Ferrous and Nonferrous Rolling Mills, Mill Rolls, Auxiliary Mill and Processing Equipment, Presses and other Heavy Machinery. Manufacturers of Iron, Nodular Iron and Steel Castings, and Weldments.

WORLD'S FASTEST In a trial run, "Slo-Mo-Shun IV" streaks over Lake Washington, Seattle, at better than 130 miles an hour.

What keeps her from flying to pieces?

Death crowds right into the cockpit beside you when you drive a boat like that.

Strange things happen. Every little wave jars the hull like a rutted road. Your foot burns at the touch of the jiggling accelerator. Your eyeballs jounce around in their sockets like glazed marbles as you keep watch for a sight you never hope to see:

Screw heads popping off like bullets as the beaten hull breaks up around you from the incessant pounding.

But that is one threat you no longer need to fear—not when your boat is held together with Anchorfast. Stan Sayres (he owns and drives the world's fastest boat) can tell you: Not even the varnish has cracked where her joints are nailed with Anchorfast.

What is "Anchorfast?" Just about the most revolutionary fastener you ever did see (at right). Once you drive it in, it can split the handle of a claw hammer before it budges a thread.

Anyone could see what a wonderful idea it was when the manufacturer came to INCO with his question: "What metal?"

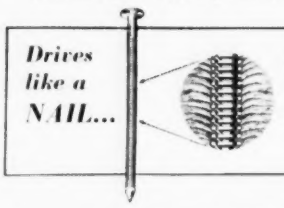
It had to be strong and tough for holding power, of course. And hard and stiff so you could drive it into hard wood without bending. Yet so rust-free and durable that it would outlast wood. Not too expensive either, mind you, for Anchorfast would sell in competition with ordinary brass screws.

Monel fulfilled every requirement as if it had been an INCO Nickel Alloy especially made for Anchorfast.

Then came INCO's Customer Cooperation to help Independent Nail & Packing Co. find markets and spread the news of their Monel Anchorfast. (Come to think of it, this advertisement itself is an example of that cooperation.)

Today you find Anchorfast in boats from "Slo-Mo-Shun IV" down to slow plodding work boats, in cooling towers, catwalks, mushroom trays—for any NPA-approved use where joints must stay tight as long as the wood lasts.

Does Anchorfast remind you of a metal problem in some product of your own? Let's talk it over. The International Nickel Company, Inc., 67 Wall Street, New York 5, N. Y.



The holding power of Monel Anchorfast comes from its unique "biting tooth" design. The wedged wood fibers lock into the grooves like dozens of tiny vises. Like to try it yourself? Write for "Anchorfast Test Sample."

Inco Nickel Alloys

Monel® • "R"® Monel • "K"® Monel "KR"® Monel • "S"® Monel • Nickel Low Carbon Nickel • Duranickel® Inconel® • Inconel "X"® • Inconel "W"® Incoloy® • Nimonics®

June 29, 1953

Price Absorption Likely

Most metalworking companies plan to absorb at least part of the steel price increase. The major automakers indicate they will try to hold the line, and many makers of other consumer durables are reluctant to increase their quotations. They all have a sharper eye on competition. General Electric Co. may be an exception to the apparent trend on pricing policy. "Profit margins in many products have been very narrow, and the new rise in steel costs will make higher end-product prices all the more necessary," it says.

Willow Run: What's Its Fate?

Will Kaiser Motors Corp.'s Willow Run, Mich., plant have to close down? Company officials say no, even though they last week lost the C-119 and C-123 aircraft contracts being fulfilled at the facility and even though they have been moving some of their Willow Run operations to Toledo as part of the Kaiser-Willys amalgamation. Some 12,000 Willow Run employees were working on the aircraft jobs, and many of them will be laid off.

Retail Sales: Autos Are the Key

If and when a sales drop does develop in cars, it's going to have a decided effect on total retail sales figures. Commerce department says that total retail sales for the first four months of the year came to $53.6 billion, a $3.9 billion gain over the same period in 1952. No less than 59 per cent of that gain was due to automobiles only. Automotive sales in the period came to $10.8 billion, or $2.3 billion ahead of 1952.

Distribution Costs Too Low?

"Total costs of distribution under present circumstances are too low." So says Undersecretary of Commerce Walter Williams, who challenges the belief of many economists that such costs are too high. He points out that total advertising expenditures in the last two years —$13.5 billion—only appear high compared with 1939-40 expenditures—$4 billion. As a percentage of disposable income and personal consumption expenditures, the current ad spending rate is only slightly over the prewar level, and in relation to total retail sales is below that level.

Background for Guaranteed Wages

These ten basic steps should be taken if you're considering a guaranteed annual wage plan, says American Institute of Management: 1. Determine the instability of your industry and company; 2. learn the cause of instability; 3. seek methods to improve your stability; 4. study your overtime pattern; 5. analyze shift operations; 6. examine the ages of employees to see how you can use overage and other marginal workers to cushion the turnover; 7. investigate the length of the work-week under stabilization, with particular note of a four-

Production-Engineering News—p. 87 *The Market Outlook—p. 131*

day, 50-week period; 8. examine your company's structure; 9. define ways the personnel manager can help operate the plan; 10. pretest the acceptability of the plan to employees and the union (if any).

Unpleasant Necessity

Industrialists are slowly swinging to favor extension of the excess profits tax for another six months. U.S. Steel Corp. President Ben Fairless says he favors it. A spot check by STEEL reveals that a majority of those executives interviewed believe extension is an unpleasant necessity.

Coming: Social Security Changes

Big changes are brewing for federal social security laws. The White House is now soft-pedaling its original proposal to by-pass the tax increase that goes into effect next Jan. 1. So, at that time the scheduled increase from 1½ to 2 per cent for both employees and employers will probably go into effect. What's more, the new Department of Welfare is currently considering extension of the system's coverage, the House Ways & Means Committee wants $100,000 to study the system and labor unions are pushing for increased coverage.

Toward A Balanced Budget

The Eisenhower administration has cut $9.1 billion from the 1954 budget estimates submitted last January by former President Truman. The House has cut an additional $1.1 billion in the bills it has acted on so far. The Council of State Chambers of Commerce says those cuts show "substantial progress toward the goal of a balanced federal budget."

Straws in the Wind

One of the first fabricators to give the steel wage increase is Mullins Mfg. Corp. which granted the 8½-cent boost to 4500 at Salem and Warren, O., plants . . . A Cleveland Chamber of Commerce survey shows that 87 per cent of the manufacturing plants in that area will not close down July 3 or July 6 for the July 4 holiday . . . Consolidated Vultee Aircraft Corp. has been awarded a contract to inspect and repair the Air Force's entire fleet of B-36 bombers .

This Week in Metalworking

Changes in favor of business are shaping up in Federal Trade Commission policy (p. 39) . . . Republic Steel Corp. becomes the first large steel producer to enter the plastic pipe industry on a commercial basis (p. 40) . . . Institute of Scrap Iron & Steel Inc. launches a fair trade practices program to improve the quality of scrap (p. 41) . . . Makers of grinding wheels may do a $300-million business this year, better than 1952 but under the record sales volume of 1951 (p. 42) . . . Dropping six presses from the heavy press program may cost the government as much as continuing their construction (p. 44) . . . Railroads are operating at an all-time high in efficiency but are slowly losing their portion of intercity freight ,p. 45) . . . Here's how to set up a forecasting program for your company (pp. 47-54) .

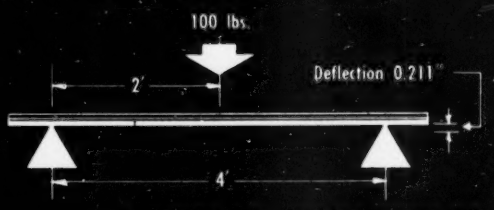
High strength for light structurals with Armco Welded Tubing

Armco Welded Steel Tubing provides a tailored-to-order steel for light structural applications that gives you an excellent combination of high strength per pound and attractive appearance.

Within practical limits, the larger the tube or special section and the lighter the wall thickness, the greater is its structural efficiency.

For example, a welded steel tube and a standard steel pipe serve as a basis of comparison. The tube tested here is 2¼-inch outside diameter with 18 gage (0.049-inch) wall thickness; the standard steel pipe has an outside diameter of 1.05 inches, a wall thickness of 0.113-inch. Both tube and pipe are about the same weight.

WHEN LOADED AS A BEAM



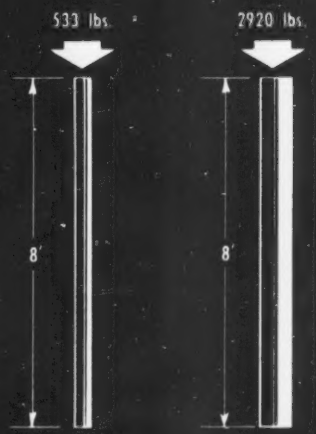
The 1.05-inch diameter pipe on 4-foot centers will deflect 0.211-inch under a 100-pound load.

But the 2¼-inch diameter tube on the same centers will deflect only 0.038-inch under the same load.

LESS THAN ONE FIFTH THE DEFLECTION WITH THE SAME AMOUNT OF STEEL!

(Besides having lower deflection the welded tubing has about two and one half times the safe load-carrying capacity of the pipe.)

WHEN LOADED AS A COLUMN



The 1.05-inch diameter standard pipe has a safe load-carrying capacity of only 533 pounds.

While the 2¼-inch diameter welded tube can carry a load of 2920 pounds with safety.

MORE THAN FIVE TIMES THE LOAD-CARRYING CAPACITY WITH THE SAME AMOUNT OF STEEL!

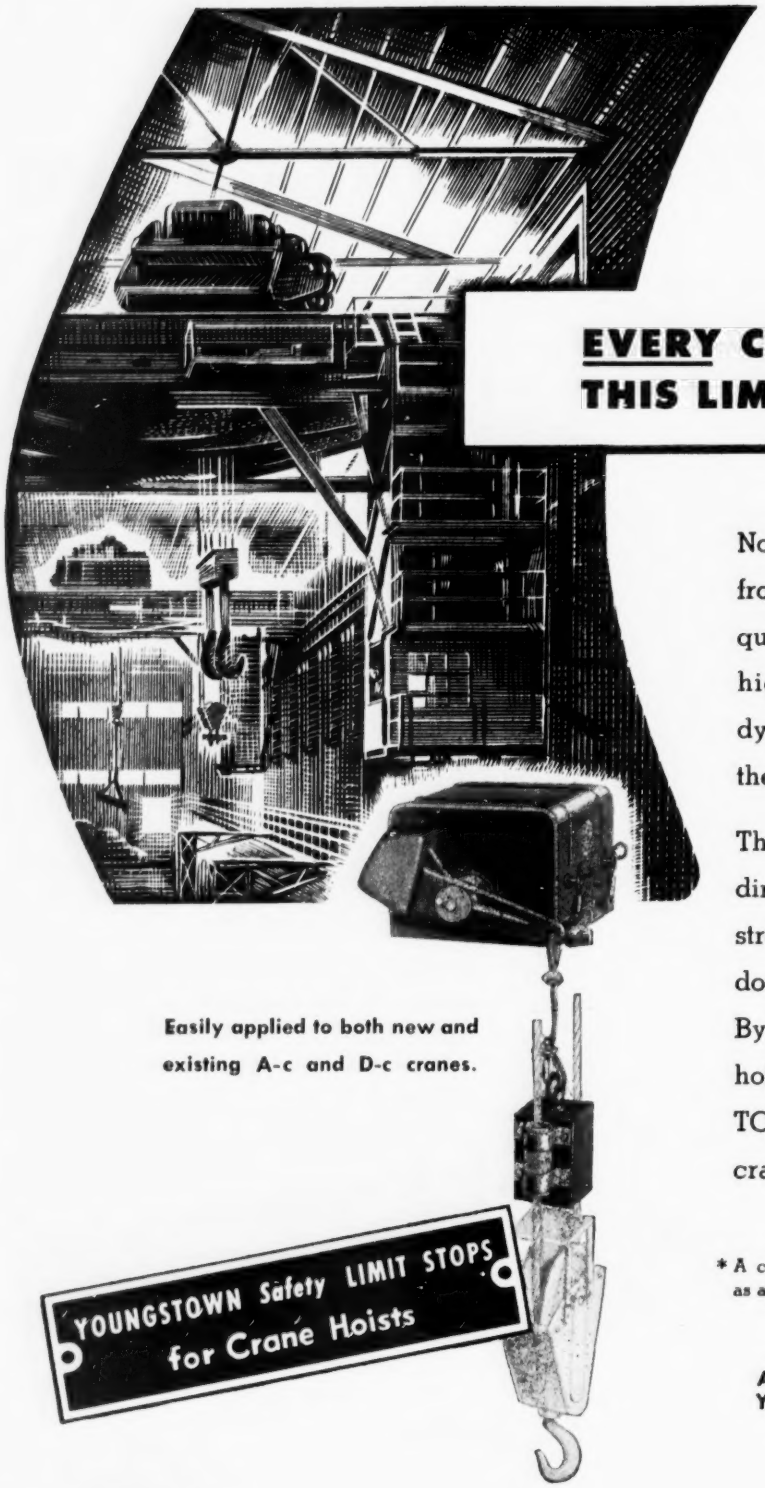
If you are not familiar with the many applications for Armco Welded Steel Tubing, or the methods of assembling it, write for these booklets: "Armco Welded Steel Tubing" and "How to Fabricate Armco Tubing."

ARMCO STEEL CORPORATION

ARMCO

2233 Curtis Street, Middletown, Ohio

Export: The Armco International Corporation



EVERY CRANE* NEEDS THIS LIMIT STOP

Not only disconnects the motor from the line, but stops the motor quickly. On D-c cranes, where high hoisting speeds prevail, dynamic braking aids in bringing the hook block to rest.

These Limit Stops are operated directly by the hook block, hence stretching of the hoisting cables does not affect the tripping point. By removing the fear of an over-hoisting accident, the YOUNGSTOWN Limit Stop enables the crane operator to do better work.

Easily applied to both new and existing A-c and D-c cranes.

YOUNGSTOWN Safety LIMIT STOPS for Crane Hoists

* A crane *without* a Youngstown is as risky as a boiler *without* a safety valve.

Ask for Bulletin 1032 describing the Youngstown Safety Limit Stop and its many advantages.

THE ELECTRIC CONTROLLER & MFG. CO.
2698 EAST 79TH STREET • CLEVELAND 4, OHIO

Realism in Defense

For several months there has been abundant evidence that the new administrators of the national defense program have been going over our military commitments with a fine-toothed comb. Numerous cutbacks and stretchouts that have taken place recently seem to indicate that the present administration is convinced that the original plans for defense drawn up by the previous administration were far more ambitious than conditions warranted.

A case in point is the heavy press program of the United States Air Force. Originally this much publicized project called for eight forging presses ranging from 25,000 to 50,000 tons capacity and nine extrusion presses ranging from 8000 to 20,000 tons capacity. About two weeks ago the government suddenly announced that the program would be cut from 17 to 11 presses. The partially completed presses that have been canceled will be stored. In some instances it will cost more to stop work and store the unfinished units than it would to complete them according to original schedule.

The Air Force says that the sharp cutback was prompted by two reasons: First, too many presses were being built; secondly, some technical problems remained unsolved. This curt explanation that "too many presses were being built," coupled with other instances of excessive zeal in procuring equipment and supplies, makes the average taxpayer wonder how much faith he can place in the judgment of our political leaders and military planners as manifested during the years we have been working on our defense program.

Can it be possible that from the very first our ideas about adequate defense against aggression have been distorted by a fantastically exaggerated estimate of the striking power of the enemy? Why have our leaders consistently discounted the obvious fact—demonstrated in recent weeks in East Germany and Czechoslovakia—that incipient rebellion in most satellite countries would make aggression of the West by Russia impractical?

The almost diametrically opposed views held by some of our highest military authorities show clearly that there has been something radically wrong in our diplomatic and military leadership. Long overdue is a defense program in which the people can place full confidence.

E. C. Shaner

EDITOR-IN-CHIEF

VERY BEST FIRST HALF: Your own business may have been good, bad or indifferent, but the sum total of all businesses in the United States for the first half of 1953 has exceeded almost all predictions. When the books of all companies have been closed on first-half business, total sales will exceed anything recorded for the first six months in any previous year.

More important than this is the probability that even allowing for declines in the last-half

of 1953, which many people expect, gross national product (the value of all goods and services) for the current year will be $355 billion—a new high.

These projections for all businesses (p. 47-54) can be very important to you. With a little skill and imagination you can translate general trends into terms that will indicate the probable potential of your own business. In many companies, management has been overlooking or ignoring benefits that can be derived from forecasting business trends.

* * *

NOW — VACUUM MELTING: During World War II the need of high vacuum in magnesium production and in certain phases of uranium purification led to the development of mechanical pumps, diffusion pumps, vacuum gages and other accessories (p. 88) for vacuum furnaces designed for resistance, induction or arc heating. Since the end of the war the possibilities of these high vacuum metallurgical furnaces have expanded tremendously. The casting, sintering, annealing and purification of oxygen-sensitive metals is simplified. Today vacuum furnaces are in the process of moving out of the laboratories into commercial production. Vacuum metallurgy provides a means of producing metals and alloys having properties not obtainable by conventional processes. It can melt titanium, zirconium and molybdenum. Vacuum melted steel is producing ball bearings that show durability beyond limits of experiments designed to measure their failure. Watch vacuum metallurgy; it may become an important adjunct to the metalworking industry's ever growing bag of tricks!

* * *

FOREMAN IN KEY SPOT: Automobile manufacturers are concerned over the mounting cost of labor turnover. They figure that in 1952 with an average monthly employment of 647,000 persons and a monthly turnover of 2.8 per cent, the annual cost was $21,739,200. In 1953 with an average monthly employment of 800,000 persons and a monthly turnover that is more than double that of last year, the annual cost may exceed $53 million.

Most employers are trying hard to find out what causes a worker to quit. The answer is complex (p. 61), but more and more the evidence points to the quality of the immediate supervisor as being the most important factor in an employee's attitude toward his job. A foreman who is a heel can make life miserable for workers who otherwise are blessed with excellent working conditions, high wages and liberal fringe benefits. Conversely, a good foreman can make life tenable for employees otherwise cursed with poor working conditions, inadequate wages and few fringe benefits.

We still underrate the importance of foremen.

* * *

WHY U. S. BIDDERS LOSE: Since Jan. 1, 1953, Westinghouse Electric Corp. has lost to foreign manufacturers more than $7 million in business on which it was the low domestic bidder. Westinghouse officials point out that wage rates are 53 cents an hour in Switzerland, 43 cents in England, 41 cents in France and 31 cents in Italy, compared with an average of $2.10 for Westinghouse workers (p. 59).

The tax angle also hurts. A Westinghouse vice president says, "Westinghouse pays high taxes so that our government can send money to foreign governments so that these foreign governments can subsidize their companies to take business away from Westinghouse so that Westinghouse can't give money to our government."

In addition to this vicious cycle, Westinghouse is penalized because of the escalator clause American bidders attach to their contracts.

* * *

RAILROADS LOOK AHEAD: Last week's railroad convention and show in Atlantic City provided an appropriate rostrum from which William T. Faricy, president of the Association of American Railroads (p. 45), presented pertinent statistics on the American transportation system. Since 1921, the railroads have encountered an 88 per cent increase in average wage rates and a 100 per cent increase in the price of materials and equipment. During the same period, the increase in income has amounted to only 12 per cent in revenue for handling an average ton of freight one mile and an average annual return on investment of less than 4 per cent.

Thirty years ago the railroads handled 80 per cent of all intercity freight. In 1950 the ratio was 60 per cent. Nevertheless, the roads have improved their position by installing 18,000 diesel-electric locomotives since World War II and by investing in new rolling stock, track, etc.

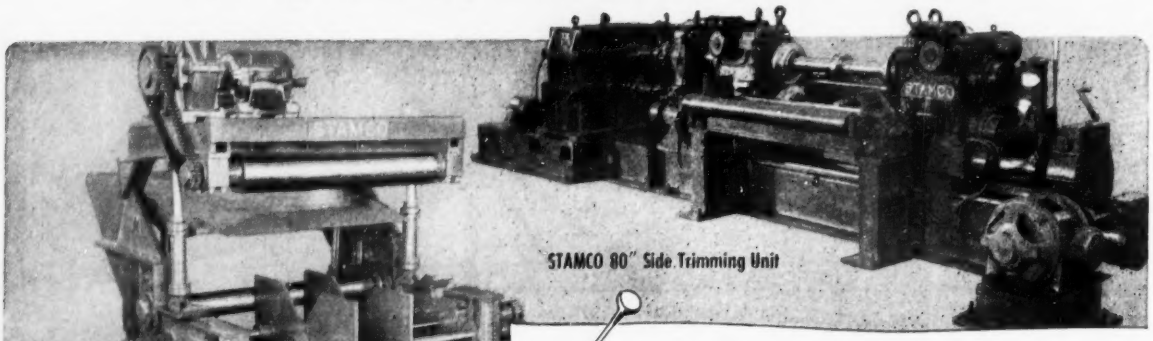
The railroads continue to be one of the metalworking industry's best customers.

VALLEY MOULD AND IRON CORP.

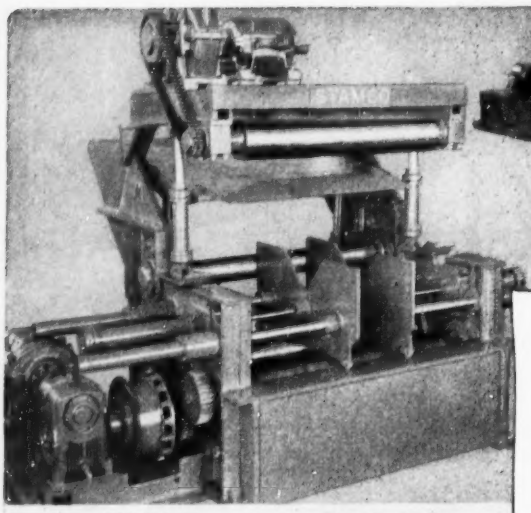
General Offices: HUBBARD, OHIO

Western Office: Chicago, Ill. • Northern Office: Cleveland, O

For Special Operations in Steel Mills...



STAMCO 80" Side Trimming Unit



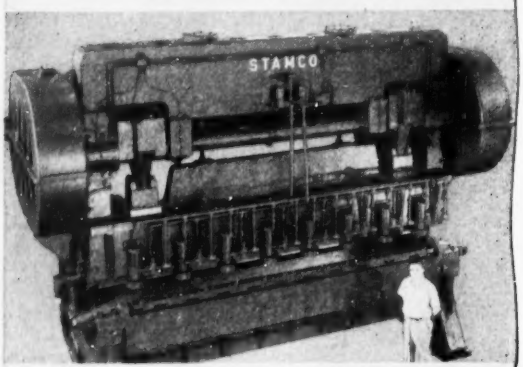
STAMCO Coil Box, coil opener and feeding unit

Call or write

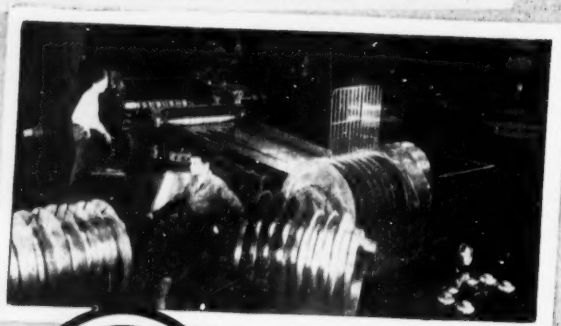
Stamco

for the equipment you need

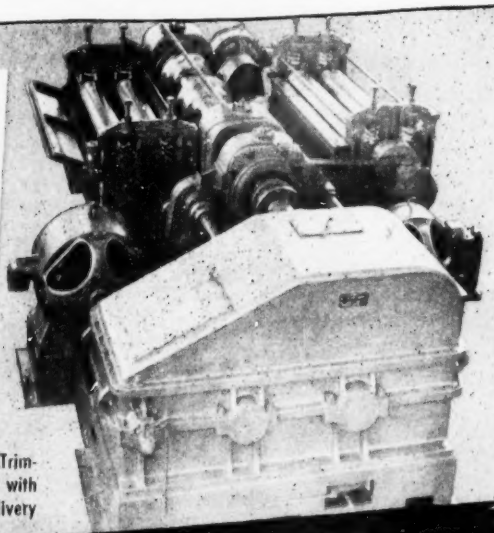
For mill or warehouse use on ferrous or non-ferrous material, STAMCO has a model or size to fit your needs—or can make it for you. If you use trimming units, plate shears, slitting units, coil openers or any other special steel mill equipment, it will pay you to write us. No obligation.



STAMCO 1¼" x 180" plate shear



STAMCO 48" Slitting & Coiling Line 15000# coil capacity



STAMCO 72" Heavy Gauge Side Trimming and Slitting Unit equipped with a double set of feed and delivery pinch rolls.

LAY YOUR SHEARING PROBLEMS AT STAMCO'S DOOR

STAMCO, Inc., New Bremen, Ohio

Fairer FEDERAL Treatment TRADE Coming COMMISSION

Big changes are coming in commission policy, notably on pricing and freight absorption. Chairman Howrey seeks to shift to preventive rather than punitive functions

THE FEDERAL TRADE Commission is turning over a new leaf that will make better reading for industry, especially in matters concerning pricing and freight absorption.

A glimpse at the new FTC pricing policy was made possible as a result of a letter from Chairman Edward F. Howrey to Sen. William Langer (Rep., N. Dak.), chairman of the Senate Judiciary Committee.

Reversal—The Howrey epistle said a majority on the commission believes that "the right to meet a lower price which a competitor is offering to a customer, when this is done in good faith, is the essence of competition and must be permitted in a free competitive economy." Previously the commission held that "good faith" was not an adequate defense against charges of price discrimination.

The Howrey letter was written to oppose a bill introduced by Sen. Estes Kefauver (Dem., Tenn.) which would nullify a Supreme Court ruling that a seller may lower his price to one customer, to meet the price of a competitor, without violating the Robinson-Patman Act. Instead, the commission endorses S. 1377, introduced by Sen. Homer Capehart (Rep., Ind.) which would write into law the principle approved by the Supreme Court.

Influence—The change in the FTC position should stimulate congressional efforts to pass legislation to clarify the right to meet competitors' delivered prices and to eliminate ambiguities in laws relating to basing points and freight absorption.

On that latter matter, a House judiciary subcommittee chairmanned by Rep. Kenneth Keating (Rep., N. Y.) is expected to make a study soon. It will look at key industries in which freight absorption and delivered pricing have been customary and will appraise the effects of such practices on individual companies.

Behind the Scenes—The turnabout in FTC thinking comes as a result of the increasing influence of the Republican members of the commission, Chairman Howrey and Lowell B. Mason. They won the vote of Democrat Albert A. Carretta to take the new position. Democrats James M. Mead and Stephen J. Spingarn were opposed. Mr. Spingarn's term ends in September, and he is virtually certain to be replaced by a Republican. Then today's three-to-two membership balance in favor of the Democrats will be reversed to favor the Republicans. Until then no more spectacular changes in policy are likely to be announced, but in the meantime the groundwork is being laid for a four-point program that will eventually mean many changes. All of those shifts will aim at giving the FTC "prophylactic rather than punitive" functions, according to Mr. Howrey.

Point No. 1—As a first step the commission wants to revitalize its Bureau of Industrial Economics to provide for greater coalescence of legal and economic concepts of competition and monopoly. The FTC wants better standards of proof for measuring injury to competition.

Point No. 2—The commission also wants to formulate guiding yardsticks in matters arising under the Robinson-Patman Act. "The main reason for failure to obtain general compliance with the Robinson-Patman Act," says Mr. Howrey, "is the mystery and ignorance (both in industry and government) which surround distribution costs." To get good distribution cost studies, the commission wants to establish an advisory committee on cost justification, consisting of accountants, economists and lawyers.

Point No. 3—The commission likewise would set up a Bureau of Consultation which for the first time would be available for consultation by businessmen and empowered to give them advance clearance under the antitrust laws for contemplated mergers, price policies and similar matters.

Point No. 4—Finally, the commission wants to speed up action on cases. Mr. Howrey has already recommended that an outside firm of management engineers survey FTC operations to eliminate excess paper work, simplify the structure of the agency's staff, redefine the ground rules under which the staff operates and decrease the work load of the individual commissioners so

they are not overwhelmed by petty matters.

The leaf-turning process in the Federal Trade Commission is still going on, but it should be about completed this fall—at a time when industry may be anxious to make greater use of freight absorption and other pricing practices to meet increasing competition. The new page will scarcely be "escape" reading, yet it promises to be far more pleasant—and more informative—than much that has come before.

A First for Republic

The steel producer acquires Owings-Sharpe Inc., manufacturer of plastic pipe

REPUBLIC STEEL CORP., Cleveland, through its acquisition of Owings-Sharpe Inc., Magnolia, Ark., becomes the first steel producer to enter the plastic pipe field on a commercial basis.

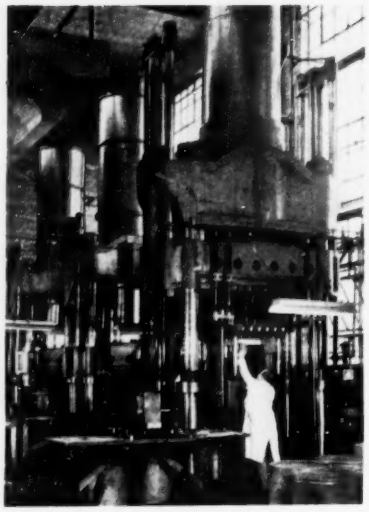
Since World War II plastic pipe has come into ever increasing use, and C. M. White, Republic's president, believes that plastic pipe and tubing, with its wide applications, has a definite place in today's industrial picture.

Familiar Face—Returning to the steel industry, with this acquisition, is J. W. Owings, one of the early promoters of plastic pipe and an organizer of Owings-Sharpe Inc. With Republic he will be manager of the pipe sales division, which includes plastic pipe.

Mr. Owings founded the concern bearing his name in November, 1952. Prior to that time he had been deputy chief of the pipe branch for WPB. In more recent years, with the Youngstown Sheet & Tube Co., he was manager of oil country tubular sales and assistant general manager of sales.

Right Connection — Owings-Sharpe Inc. produces plastic tubing ranging from ½ to 6⅝ inches in diameter. Although plastic pipe is at present not suitable for many high pressures and temperatures it can be used in connection with highly corrosive liquids, which other materials will not withstand. It can be manufactured in either rigid or flexible forms and numbers among advantages its light weight and economic installation and fills many needs for the petroleum and mining industries.

Though the Owings-Sharpe plant is small, it is well situated in relation to raw materials requirements and to a market capable of substantial growth. Its production will supplement Republic's line of steel pipe, and its plant will also serve as a working laboratory. National Tube Division of the U. S. Steel Corp. and a number of other producers have been experimenting with plastic pipe.



Pressing Plastics Plans
Molders of big plastic parts like those above, users and designers meet in Chicago in mid-September for the first Midwestern Plastics Conference

ODM Issues 160 Certificates

Office of Defense Mobilization issued in the two weeks ended June 17 certificates of necessity for rapid tax amortization on 160 new or expanded facilities, valued at $357.4 million.

Among the largest certificates to metalworking companies: Westinghouse Electric Corp., Pittsburgh, research and development of aircraft parts, $6.6 million, 65 per cent allowed; Bethlehem Steel Co., Bethlehem, Pa., steel production at Lackawanna, N. Y., $2.7 million, 65 per cent allowed; Cincinnati Milling Machine Co., Cincinnati, machine tools, $18 million, 40 per cent allowed.

Ad Man's Role: To Get Bonus Business Economically

MANAGEMENT expects advertising managers to develop programs of advertising and promotion that will help increase the long term return on the capital employed in the business. This includes the entrance into new markets and the introduction of new products.

That was the message given the 31st annual conference of the National Industrial Advertisers Association in Pittsburgh June 22-25 by Tomlinson Fort, vice president, Westinghouse Electric Corp., Pittsburgh.

The test of the advertising manager's performance is whether his promotions, ads and meetings bring in plus business economically, says Mr. Fort.

William C. Sproull, director of advertising for Burroughs Adding Machine Co., Detroit, is new president of the NIAA. Kent S. Putnam, G. M. Basford Co., New York, is secretary-treasurer.

Vice presidents elected by the association are: Arthur W. Cowles, Carborundum Co., Niagara Falls, N. Y.; Robert C. Myers, U. S. Steel Corp., Pittsburgh; Arne J. Oker, American Optical Co., Southbridge, Mass.; Henry J. Tymick, Buchen Co., Chicago.

WILLIAM C. SPROULL
. . . heads industrial advertisers

Scrap Problem Explodes

Method of checking bundled scrap points up need for quality control. Scrap men act

THE PROBLEM of contaminated scrap bundles has exploded in the face of scrap dealers supplying the steel industry.

Only recently has an efficient method of determining quality in bundled scrap been devised. That method, developed by Bethlehem Steel Co., consists of exploding a stick of dynamite inserted in drill holes of selected bundles. The bundles don't blow to pieces—they simply blossom out, exposing the interior, and in a number of instances, sharp practices.

Police Duty—The Institute of Scrap Iron & Steel Inc., as part of a self-policing program, is launching a fair trade practices program to improve the quality of scrap and to maintain the scrap industry as the principal supplier of the material to the iron and steel industry.

Each of the 24 chapters of the institute is creating a fair trade practices committee of five members, and from the 120 members of these local committees a panel will be drafted to consider cases of violation deemed serious enough to warrant a hearing. An educational program to acquaint every dealer with the specifications and requirements of mills and foundries will also be undertaken.

Basis and Need—The Pittsburgh chapter of ISIS has already elected its fair trade practices committee: I. W. Solomon, E. Clyde Grimm, John W. Todd and Emanuel H. Wimmer, all of Pittsburgh, and David Coslov, of Glassport, Pa.

Scrap Consumption High

Consumption of purchased scrap totaled 12,116,000 gross tons, an annual rate of more than 36 million tons, for the first four months of 1953. The previous record was 33,822,000 gross tons hung up in 1951.

The ratio of metallics used by the iron and steel industry in the same period was identical with the comparable period of 1952—25 per cent purchased scrap, 26 per cent home scrap and 49 per cent pig iron.

Black Star

Labor costs grow heavier with fringe benefits as . . .

Fringes Become Industry's Standard

The period of wage stabilization from 1951 to 1952 had the effect of making "extra" benefits standard. Result: Some of labor's most remarkable gains

FRINGE BENEFITS, transformed from frills to industrywide standards by the alchemy of wage stabilization regulations, have given labor some of its most remarkable gains in the last three years.

Number of firms providing group life insurance coverage in Cleveland, for example, has quadrupled since 1950; maximum group life insurance benefits have sprung from $1000 or $2000 to $3500 or $5000; sickness and accident insurance covers twice as many workers today as three years ago and sick pay of $35 or $40 a week for a length of 26 weeks is no oddity.

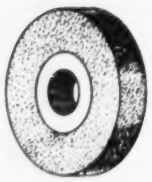
Extras Are Standard—During 1951 and 1952, Wage Stabilization Regulations 13, 19 and 21 permitted management to match the norms for its industry or area in wages and fringe benefits. Small and medium size firms, especially, found that with wages frozen they had to work fringe benefits up to the limit in order to hold onto or recruit a labor force. That upper limit, often raised during the period of controls, became the standard for union bargaining.

Labor experts agree that these trends, traced in detail by the Associated Industries of Cleveland in its 1953 "Management-Labor Relations Handbook," are indicative of a strong and continuing bent across the country. AIC's handbook, though gathered primarily for the association's members, is available to firms outside Ohio at $10 per copy.

Wages Gain, Too — While the more amazing changes have taken place in fringe benefits, wage rates have not stood still either. In 1950 the straight time average wage of manufacturing workers was $1.538 in Cleveland (straight time based on 40-hour week, no overtime, incentives or premium). At present the straight time average wage is $1.83 an hour, a gain of nearly 30 cents, again occurring during a time of wage and price control.

Scarce Items List Cut

National Production Authority is withdrawing 57 items from its list of scarce materials, leaving only six items in its "scarce" category. The remaining six items: Diamond grinding wheels, chromium, cobalt, columbium-tantalum, molybdenum and nickel.



Grinding Wheels:

They'll do better this year than last because of higher auto, steel production and fewer strikes

GRINDING WHEEL manufacturers are keeping their noses to the stone this year and as a result will probably grind out close to a $300-million year.

With little to hamper them except the omnipresent scarcity of diamond bort, the industry feels it can better its showing in 1952 when it recorded $295 million worth of list orders. However, it won't beat the record year of 1951. One of the big reasons for the increase over last year is that there has been no steel strike or prolonged disturbance in the auto industry in 1953. Coupled with that, of course, is the increased production in those industries, the two biggest users of grinding wheels.

May Be Big One—Norton Co., Worcester, Mass., reports that its sales of grinding wheels so far this year are running about 18 per cent ahead of the same period last year. A letdown is expected in the second half, which is normal because of the vacation period, but production may equal the last six months of 1952. Considering that the company last year was only 8 per cent off the record 1951, this could prove to be the big one for Norton.

The story is similar from other big producers, such as Carborundum Co., Niagara Falls, N. Y., and Bay State Abrasive Products Co., Westboro, Mass. Distributors are reporting a good volume from customers, with inventory levels running normal. Deliveries from producers range from three to seven or eight weeks, depending on kind, size and whether it is a special wheel or standard stock. This is normal, industrymen report, being about the same time as required two years ago. Delivery of vitrified wheels takes longer than resinoids because they are a high-heat product and require a longer period to produce.

Good Health to All—Another indication of good business health in grinding wheels is the backlog, which is now about 5-10 per cent greater than a year ago. One producer reported a 50 per cent increase, but that is an isolated case. Most manufacturers are reporting full-time operations, and still their backlogs are climbing.

Grinding wheelmakers are not worried about a truce in Korea and a subsequent slackening in defense work. They point out that their product has its greatest use in the auto industry, basically a civilian industry. They are watching Detroit with more than passing interest as the motor city roars past the first half of its 5.5-million-autos goal on schedule.

Boosters — Steelmakers, second largest customers, are not pessiistic, and that too bolsters the abrasive wheelmakers' morale. The big defense user, aircraft, anticipates heavy production despite Air Force budget cutbacks. So the grinding wheel industry believes it's justified in its enthusiastic outlook for the rest of 1953.

New Price Books Issued

Carborundum Co., Niagara Falls, N. Y., and Norton Co., Worcester, Mass., leading producers of industrial grinding wheels, put into effect on June 15 simplified price books.

Because of the wide range of specifications for grinding wheels, old price catalogs were thick and required much leafing to arrive at a final price.

Under the new system, Carborundum cut the size of its book from 114 to 36 pages. The salesman finds the wheel desired and determines the price with a minimum of leafing.

Military Electronics Soars

More than $5.5 billion of electronics products for the armed forces have been delivered since the outbreak of Korea, and military deliveries of electronic items in 1953 will total around $3 billion, says A. D. Plamondon, president, Radio-Television Manufacturers Association.

The post-Korea total of $5.5 billion represents more than two-thirds the value of industry shipments in World War II when the industry was producing military items only.

Gulf Coast Industry Grows

The metalworking industry has invested about $300 million in plant and employs 34,864 persons in the Texas Gulf Coast area, says the Texas National Bank, Houston. The primary metals industry has invested $209.1 million; makers of oil tools, $51.9 million; producers of other fabricated metal products, $42.3 million; foundries, $7.1 million.

Shell Molding To Increase

Usage of shell-molding techniques among foundries will continue to spread rapidly and may raise that industry's consumption of thermosetting phenolic resins to nearly ten times its present consumption in the next five years.

So says Reichhold Chemicals Inc., Detroit, estimating that 300 foundries today are using or experimenting with shell molding, compared with only 100 foundries less than a year ago. The chemical firm predicts that foundry consumption of phenols will reach 75 million to 100 million pounds annually in five years, compared with the current rate of 10 million pounds a year.

Emergency Order Planned

Motor truck manufacturers and the Commerce department are preparing a basic order for the industry in case of an enemy attack. In addition, steps are being taken toward setting up a division within the Commerce department after July 1 to keep the government informed on their views and problems in peacetime, as well as in emergencies, says the Motor Truck Manufacturers' Industry Advisory Committee.

Expansion Continues

Manufacturers proceed with caution on expansion plans as interest rates rise

ARE HIGHER interest rates scotching industry's expansion plans which are already in the works?

A survey by STEEL indicates the answer is "No." At least not for metalworking plants. Some utilities have withdrawn long-term bond offerings to wait for lower financing costs. But, the metalworking industry isn't being stopped by the ¼ or ½-point rises in interest rates effective thus far.

A Big Point—Why?—"A fellow who wants to buy 2 or 3 milling machines doesn't much care whether he pays 4½ or 4¾ or 5 per cent interest; it doesn't bulk too large. But if a company is going to issue $25 million or $50 million worth of securities that won't be repaid for 25 to 30 years, a ¼ or a ½-point rise makes a big difference," says John Dupuis, vice president, Peoples First National Bank & Trust Co., Pittsburgh.

Manufacturing companies' capital outlays are projected to run 7 per cent ahead of 1952 for the first three quarters in 1953, attaining an annual rate of $28.7 billion in the third quarter, 1953 (for more on that, see STEEL, June 15, p. 53).

Advance with Caution—"Manufacturers, generally, seem inclined to move ahead with plans, but to move with increasing caution," says one eastern banker. The caution stems from the likelihood the money market will not ease greatly before the end of the year. Interest rates probably will not go much higher but they aren't going to dip, either.

That's because investment money for industrial expansion is still in demand; there's a flood of municipal bonds just now seeping into the money market; and the federal government is faced with the necessity of selling several billion dollars worth of new bonds to cover current deficit spending. All these make demands on available money. Will tend to keep high interest rates firm.

Your Choice—No one can tell how many expansions, which were in the "planning" stage, have been revised or abandoned on the basis of higher interest rates. "You have a more real prospect today of scalebacks on the defense side with the progress of the truce talks in Korea," concludes the eastern banker. "How much of the revised plans can be attributed to the money situation and how much to the changed international outlook is a matter of your own choice."

Equipment Buying Criticized

Costly installation of heat treating equipment is becoming prevalent among defense manufacturers, warns the Metal Treating Institute, trade association for commercial heat treaters. Some defense producers are forced, or permitted, to install such equipment costing anywhere from $50,000 to $500,000 when the skills and facilities of heat treating organizations could be obtained easily, often in the manufacturers' own neighborhood, institute members told a subcommittee of the House Committee on Government Operations.

Members said that 90 per cent of such heat treating equipment purchased in World War II was later thrown on the market as surplus and unneeded.

ODM Creates Borrowing Board

A Borrowing Authority Board has been created by the Office of Defense Mobilization to map out the future of programs authorized and financed under Title III of the Defense Production Act. The board's immediate objective is to ascertain how much government-financed and owned equipment remains idle in defense plants and available for other use or storage.

In so far as possible the board will also acquaint itself with the needs of the armed forces for stand-by equipment and facilities.

Industry Doubles Capacity To Produce in Ten Years

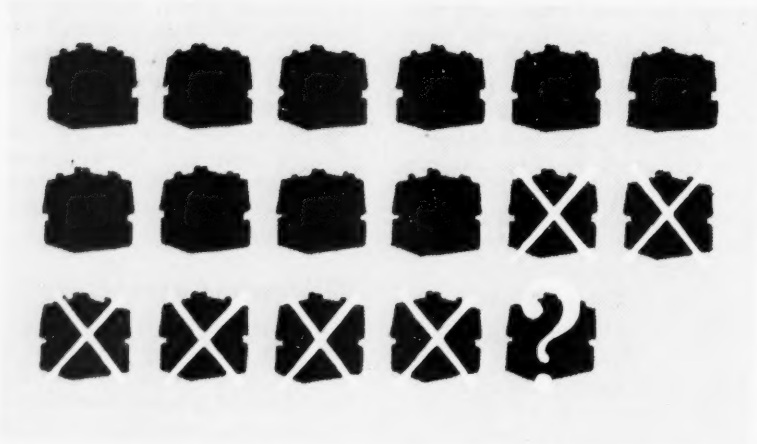
	1942-1952 Increase in . . . Gross Value*	Net Value†
Nonagricultural machinery	105%	139%
Agricultural machinery	127	151
Motor vehicles	120	116
Other transportation equipment	31	39
Other equipment	48	66
AVERAGE	86	110

*Gross value, measured in constant dollars for 1942 to 1952, is total value of business-owned equipment.
†Net value is gross value less accumulated depreciation.

BUSINESS purchases of new equipment from the beginning of 1942 through 1952 totaled about $145 billion and approximately doubled America's productive capacity, says the Commerce department's Office of Business Economics.

In the same period, total discards of producers' durable equipment were about $67 billion in current dollars. Thus, nearly half of new purchases of producers' durable goods was for replacement of discarded equipment. Total depreciation was about $96 billion in current dollars. So, about two-thirds of the equipment purchases were for replacement of service life used up during the ten-year period.

The cost of replacing discarded equipment exceeded original cost by about 15 to 20 per cent during the period, 1942-1945. Thereafter, replacement costs rose sharply and in 1952 were about 80 per cent above original cost. Depreciation of equipment on a current cost basis exceeded depreciation on an original cost basis by about 15 per cent during the 1942-1945 period and by about 20 to 25 per cent in the 1946-1952 period.



Out of 17 units, six are gone and one remains doubtful as the . . .

Heavy Press Program Gets the Ax

The government may find it an expensive proposition to terminate part of the program. Hardest hit will be the hundreds of subcontractors and sub-subcontractors

TERMINATION of a fat portion of the Air Force's heavy press program ended months of indecision and squabbling over the program, but it left confusion and still some doubt in its wake.

The Air Force originally canceled out seven mammoth forging and extrusion presses (STEEL, June 22, p. 47), and then changed its mind about the 25,000-ton Bliss forging press which was nearly two-thirds complete at the time. R. Y. Moss, manager of the Canton Division, E. W. Bliss Co., says the company has Air Force instructions to complete operations in progress on June 18, but not to start any distinctly new operations until the government makes a decision on the unit.

In Their Stride—The four producers affected by the order—Bliss; United Engineering & Foundry Co., Pittsburgh; Loewy Construction Co. Inc., New York; and Baldwin-Lima-Hamilton Corp., Eddystone, Pa.—report that the termination will not affect their level of production during the remainder of 1953. They will fill the vacuum from backlogs with a minimum of disruption in work schedules. But by 1954, most of them believe they will have to make some adjustments.

Hardest hit will be hundreds of vendors supplying parts to the prime contractors. Robert Tabors, sales manager of the B-L-H Machinery & Foundry Products Division, said his company sent out 150 termination telegrams. Alexander Zietlin, vice president of Loewy, said about 60 vendors would be affected by termination of its 20,000-ton extrusion press. K. C. Gardner, chairman of United, said the subcontractors for the two presses his company was building would "run into the hundreds."

Best Off—From the subcontracting viewpoint, the two Bliss presses were best off at the time of cancellation. Most of the steel was in the Canton plant and the first of the 1500-horsepower motors was shipped. Therefore, Bliss's subcontractors had completed most of their contracts and will not feel the termination's effects as much as the others.

Also hard hit by the cancellations will be the sub-subcontractors, which are sure to run into the thousands in practically every branch of metalworking.

It Will Cost—The real confusion will arise as to how much government will have to pay in termination costs and how it will store the presses. All the canceled units were in the process of fabrication or assembling. Some producers think that by the time the Air Force pays off the contracts, collects the various parts in plants all over the country, transports them to storage plants and pays for the storage, it will cost more than it would to complete the presses.

Again, the Bliss presses will be easiest to store. Not only were they the most completed, but also the foundations were in place at Newark, O., only a few miles away. Kaiser Aluminum & Chemical Corp., which was to run the presses for the Air Force, was instructed to proceed "at a minimum construction rate" with the buildings. Most of the framework is up and practically all the steel for the structure is on the site. It is possible that the presses will be stored on their foundations in a state of readiness, especially if the smaller unit is completed.

None of the foundations for the other terminated units were constructed, so the government will have to find some place else to store them.

Wiped Out — The terminations wiped B-L-H out of the program and left Bliss with a small and doubtful portion of it. Among the users, Harvey Machine Co. Inc., Torrance, Calif., and Kaiser Aluminum & Chemical were the hardest hit. However, officials at Kaiser point out that production plans for the presses were not yet concrete, so it will have no effect on their production schedules.

There was no time to prepare for the termination. As one producer put it, "We knew the program was under attack, and we were expecting something to happen. But we had no prior notice of this thing; just a phone call from Wright Field (Dayton, O.) one day and a telegram from the Air Force two days later."

Rheem Gets Shell Contract

Rheem Mfg. Co., New York, received a $6.1 million order from the Philadelphia Ordnance district for shells to be produced at the Burlington, N. J., plant, which the company operates for the government.

NEW "WORLD" LOCOMOTIVE
Designed by American Locomotive and G.E., it operates on all gages

Railroads: More Efficient, But—

They now handle less than 60 per cent of all intercity freight, compared with 80 per cent 30 years ago. Solutions: Less U.S. interference, still better equipment

AMERICAN RAILROADS have reached an all-time high in operating efficiency. Yet they are still losing ground competitively and are badly in need of funds to pursue new channels of research and improvement.

Such is the situation outlined by William T. Faricy, president of Association of American Railroads, at the railroad convention in Atlantic City last week.

Statistical Story — Financial plight is emphasized by an 88 per cent rise in average wage rates and a 100 per cent boost in prices of materials and equipment since 1921, but an increase of only 12 per cent in revenue for handling an average ton of freight one mile and an average annual return on investment of less than 4 per cent. Thirty years ago the railroads were handling 80 per cent of all intercity freight in the U.S. By 1950 that figure had fallen to 60 per cent, and the downward trend has not yet been reversed.

But there are some bright spots in the picture for both the railroads and their equipment suppliers. Greater flexibility of government rate regulations to match those of railroads' competitors will help substantially. Already a lifesaver for railroads has been the evolution in cost-saving equipment. That trend is still going on, as was demonstrated at the $20-million show held in connection with the convention. More than 200 manufacturers displayed products.

Equipment Story—Since World War II, railroads have spent $8 billion on improvements and have brought about a "revolution in motive power" by the installation of nearly 18,000 diesel-electric locomotive units. They have purchased more than 500,000 new and improved freight cars, thousands of new and diversified passenger cars and 12 million tons of new rail.

As they gain experience with the new units, the railroads have great hopes for the newly developed gas turbine locomotive driven by oil. There is also anticipation that a gas turbine locomotive powered by coal will be successfully developed soon. Railroads are increasing their study of the potentialities of atomic energy in transportation, too.

From Little Acorns—But William White, New York Central Railroad president, warned that "there is no reason to expect in the foreseeable future any new development comparable to dieselization as a factor in cutting costs of railroad operation. The hope for future economies lies in many smaller, less spectacular innovations."

He urged wider application of "industrial engineering principles, borrowing and adapting techniques from some of the other mass production industries, as well as developing new ones of our own." For example, he pointed out that much progress could be made by railroads in the art of diesel maintenance.

Accent on Economy—Railroads can take a page from industry's book, too, on better scrap utilization, says New York Central's D. T. Matthews, assistant general storekeeper at the road's Collinwood yards in Cleveland. There, material handling skids have been made from scrap steel box car sides, stanchions devised from scrap brake beam channel steel and car stops manufactured from scrap rail.

The railroads in 1952 sold to the steel industry 4,760,000 tons of scrap metal, about 13.9 per cent of all scrap used by steelmakers last year. The all-time record was 5,561,000 tons in 1951.

More Shipping Controls

Shipping interests and shipbuilders favor enactment of S. 1439, introduced by Sen. Warren G. Magnuson (Dem., Wash.).

Senator Magnuson's bill provides that "waterborne cargo or passengers under the control of the U. S. government shall be transported in privately-owned and/or operated vessels documented under the laws of the United States to the extent of the capacity and ability of such vessels to perform the services required at fair and reasonable American rates and charges." The Senate Interstate & Foreign Commerce Committee held hearings on the bill and now is preparing to report it.

Get Set for Changes

CMP and NPA will pass into history on June 30 and will be succeeded by DMS and BSA

THE CHANGE to fewer and less rigid controls on materials at midyear is expected to go fairly smoothly, even though Congress has been late in passing the needed legislation.

Midnight, June 30 marks the expiration of the Controlled Materials Plan and the subsequent birth of a new and watered-down controls setup—the Defense Materials System. Most government agencies and industry executives are prepared for the change. Appointees to DMS are ready to swing into action on July 1, and most companies to be affected by the change have studied the DMS controls for military and atomic programs, cultivated their suppliers and primed their purchasing departments on the new conditions.

Fewer on the Payroll—Also to pass into history is the National Production Authority. Many NPA functions will be picked up on July 1 by a new Commerce department agency, tentatively named Business Services Administration. This new agency will also absorb Commerce's regular services to business—including the newest one which deals with distribution problems. Working staff of BSA will comprise the NPA personnel to be retained, between 700 and 900 persons. This means dismissal of some 400-600 persons now employed by NPA. The 700-900-person staff scheduled for BSA compares with approximately 5000 persons in NPA at its peak.

Appointment of branch and division heads for DMS will follow the NPA procedure. At present the industry executives now heading NPA divisions will have similar positions in BSA and will be replaced on a rotating basis by other industrymen, selected largely on nomination of industry advisory committees.

Office of Defense Mobilization is also setting up a new organization plan. Principal feature of the ODM plan is that the agency will rely more on industrymen to shape its policies.

Protection Coming

Lockheed Aircraft Corp. reports production of Starfire F-94C jet interceptors now at an all-time high. Here they move through Lockheed's Burbank, Calif., plant on the way to the Van Nuys, Calif., plant for final assembly. The F-94C is a day-and-night fighter; can find and lock on its target by radar. It has a two-man crew

CHECKLIST ON CONTROLS

Materials Orders

DISTRIBUTION—Revocation of NPA Order M-89 on June 18, 1953, effective July 1, removes controls over distribution of controlled materials to retailers.

COPPER—Amendment of June 25, 1953, of NPA Order M-11A establishes the current month as a base period for producers of copper goods who did not make during the first six months of 1952 the products they are making today. It is effective July 1.

STEEL DISTRIBUTORS—Amendment of June 25, 1953, of NPA Order M-1A permits steel distributors to strengthen inventories of alloy steel containing higher percentages of molybdenum than heretofore allowed. It was effective June 26.

Scarce Materials

SCARCE MATERIALS—Amendment of June 18, 1953, of Designation of Scarce Materials 1 removed all materials from such designation except diamond grinding wheels and the alloying materials chromium, cobalt, columbium-tantalum, molybdenum and nickel. It was effective June 18.

Appointment in Washington

John M. Ferry, building engineer for New York Telephone Co., was appointed special assistant for installations to undersecretary of Air Force James H. Douglas Jr.

No. 5 STEEL's Management Series . . .

The editors of STEEL herewith present the fifth in a series of ten articles in this publication's Program for Management. The complete list:

1. **Public and Community Relations** (Feb. 23, page 53)
2. **Industry-Government Relations** (Mar. 30, page 53)
3. **Research, Basic and Product** (Apr. 27, page 55)
4. **Purchasing** (May 25, page 105)
5. **Business Forecasting, Midyear Review**
6. **Distribution—Post-Emergency Challenge**
7. **Labor and Industry Relations**
8. **New Materials**
9. **Depreciation and Re-Equipment**
10. **Market Research**

STEEL

Forecasting Business Trends

A BEARDED gentleman was once standing in his decrepit office looking at a sales chart that showed a high volume in the 1890's but a decline since then so marked that the trend line was far below the original chart and threatening to go through the floor.

"I can't understand it," mourned the man. "My company still makes the best buggy whips in America."

Up-To-Date—Business forecasters love that story. They claim that if one of their tribe had been employed by the buggy whip manufacturer about 35 or 40 years ago he would now have the bearded gentleman doing nicely by manufacturing accelerator pedals, throttle mechanisms or something else more in tune with the times.

For the essence of an industrial forecaster's job is to keep his company in tune with the times. The ideal forecaster, according to one executive, is a man who can keep half his mind on today and half on a period anywhere from three months to 15 years from now, correlate the two moments in time and not go crazy. That ability has always been valued, but never more than now when the course of business has already started to veer toward a route of greater competition and increased sales emphasis.

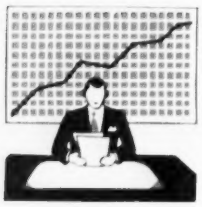
Requisite—Ray Eppert, executive vice president of Burroughs Adding Machine Co., Detroit, says: "There is no question in my mind that (business forecasting) is indispensable in the business operations of today. And in view of the perplexing economic forces we find at large in the world, it will play an increasingly vital role in corporate activities." Dr. Louis J. Paradiso, chief statistician and assistant director of the Commerce department's Office of Business Economics, says: "There's more need now for business forecasting than at any other time."

Basically, there are two kinds of business forecasts, the short-term and the long-term. The short-term, dealing in terms of seasonal and business-cycle movements, is the most commonly used and is concerned with predictions of business trends three months to a year in advance. The long-term job, dealing in terms of trends, takes a look one to 15 years ahead. It is necessarily less accurate than the short-term type and is used mainly by larger companies.

Tools—The short-term prophecy is invaluable as an aid to plan for inventories, pricing, flow of materials, employment, the advertising and sales cost budgets, how much to withhold for taxes, sales quotas and many other short-run problems of a company. The long-term forecast is helpful in gaging your expansion and investment plans.

So, you are convinced that your company needs a business forecast. How to go about getting one? You have a choice of several approaches.

Outside Help—First, you can hire an outside organization or individual to do it for you. Fees for outside organizations — one of which has some 450 clients — aver-



WHAT A GOOD FORECASTER SHOULD POSSESS:

In Temperament . . .

- High intelligence
- Good judgment
- Inquiring mind
- A degree of skepticism
- Ability to work with management team
- Interest in statistics
- Practicality, combined with a feeling for theory of forecasting
- Intellectual honesty
- Interest in current events

In Education . . .

- Two years of college accounting
- One year of business statistics
- One college year in money
- One college year in banking
- Mathematics at least through college algebra and preferably into calculus
- At least two college years of basic economics

age about $1200 to $1500 a year, and services include periodic, general surveys of business conditions, plus an occasional tie-in of the general information with your specific situation. Those organizations also specialize in one-shot studies of some special problem. Research organizations can do a job for you relatively inexpensively, but of necessity their services are rather general. Many clients find their information most helpful as a supplemental measuring stick and check.

Many companies also get good forecasting services by hiring an outside man, usually a professor at a nearby college or university, on a part-time basis. You get more individual attention that way, but it usually costs more than a research organization would charge and the number of educators who have the time for many such consulting jobs is limited.

Do It Yourself — A third approach to the problem is to train one of your own executives to do the forecasting job. Many smaller companies do this, and successfully, too. But the consensus of business forecasters is: Don't assign that responsibility to a sales manager unless you have an unusual man for that type of job. The reason is that most successful salesmen are naturally optimistic. They have to be to make good. Yet a temperament requirement for a good forecaster is a certain balancing pessimism not often found in a sales executive. If you're going to give forecasting to someone already in your organization, take a look first at the man who has the controller's responsibilities. If he's doing well at that, he'll probably make a success of predictions.

A fourth, and probably the most satisfactory, approach to the problem of how to get satisfactory business forecasts is to go out and hire an economist, full-time. That's not as expensive as it might seem, even to a small company. Although an experienced economist can command a salary of from $8000 to $15,000 a year, you can also choose to develop a younger man at a proportionately lower figure. Young men just out of college with good scholastic recommendations and training in economics are starting at about $350 a month.

The Man — Many schools have fine courses in economics, for example: Chicago, Columbia, New York, Princeton, Harvard, Pennsylvania, Michigan and Johns Hopkins. While a good scholastic background is essential for an economist, many other qualities are also requisite, chiefly that unteachable one, judgment. The accompanying checklist of qualities and background that a forecaster should possess can help you pick a good man, either from within your own company or from outside. A good mentor to assist you in picking your forecaster could be a specialist in economics at your local university. In getting started on a forecasting program, you would be wise in hiring such an individual for a while as a consultant, both to pick out your full-time employee and to help get a program started.

The expense of a full-time economist for your company can be mitigated by having him do many other related jobs. It will take time to work into other activities, but eventually a full-time economist can pay off even for many small companies, point out Russell Widmer and William Carlin of Republic Steel Corp.'s Commercial Research Department.

Self-Supporting—He can pay his way by doing work generally called commercial research. That includes market measurement, testing sales techniques in order to learn how to get to the markets, sales administration and forecasting. (Another in STEEL's series, Program for Management, will be concerned in detail with market measurement and sales technique testing, sometimes called market research.)

Start Cautiously

Let's suppose you have hired a full-time economist. What do you do next? One thing you don't do is to insist upon an immediate full-scale forecast. Several hurdles must be jumped before a company is ready for that, one of the most formidable being the relative ignorance of many management men about the language and tools of forecasting. Such a knowledge is essential because forecasts are made so that top management can better manage its affairs. It can't take full advantage of a forecast unless it understands the terms and what the basic statistics really mean.

First Step—The first job for a forecaster is to educate management. An aid in this project is a weekly desk sheet, a typewritten page or two circulated each week among top executives giving the position of some of the basic indicators. In conjunction with pointing out the position of the benchmarks, the forecaster can explain what they mean. For example, few people outside the ranks

of economists know what gross national product is, or what comprises the Federal Reserve Board's industrial production index, or how the consumer price index is figured or what disposable personal income is.

At least one forecaster has gone so far in educating his employers that he has prepared a series of pocket-size cards with a trend line showing the current spot for various indicators and a few words explaining what the indicators are. Those trends are brought up-to-date and new cards supplied every now and then as the president of the firm wears them out from frequent use.

More Education—Although the new forecaster has to educate management, he must be educated himself into the particulars of the business. For that and other reasons, says D. C. Elliott, economist for Cleveland Trust Co., Cleveland, it's wise to give a forecaster a certain autonomy in his position with the company so he can learn policy and operations from all angles. Many economists are attached to the sales department, which is logical and satisfactory as long as that autonomy is preserved. Other companies provide that the economist be responsible directly to the president.

The next step for the forecaster is to learn the sources for his information. The accompanying tabulation lists the best. The most complete source is the Department of Commerce's monthly Survey of Current Business which contains some 4000 series. While the government is by far the major source for the most statistical information, much of it can be related to your specific business in a general way only. An excellent source for specific statistics is your trade association. Often it has data you never suspected it possessed, or in many cases it will try to get statistics for you that it doesn't already have.

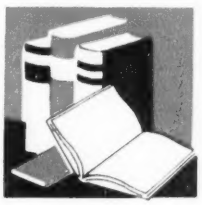
Case In Point—A primary aluminum producer, for example, wanted figures on aluminum consumption by screw machine parts producers so that it could forecast consumption of the light metal by that industry for a year ahead. It presented its problem to the National Screw Machine Products Association which had figures on past aluminum consumption and had also made predictions on what volume its industry could expect for a year ahead. In that case, the aluminum producer had a simple forecasting job, already partly done for it.

The next job for the forecaster is to preprocess some pertinent data, simplify it, keep it up-to-date and relate it to his own company. In picking basic indicators, be sure that they are: Readily available; forecastable and checkable by outside comment; and closely and logically related to your own business.

Case For Logic—For example, the number of grasshoppers in an acre of land near Detroit may closely relate to the number of Dearborn tractors sold in 1952, but there's no logic, and therefore no value, to the correlation. There's far more logic to a correlation between farm income in 1952 and the sales of Dearborn tractors.

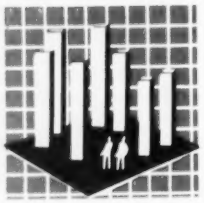
Nobody agrees as to what the best basic indicators are. That's not surprising because one set may be good for one industry but of little value for another. The best thing for the forecaster to do is to pick his own after he gets experience, then adapt and simplify them for his own use. About a dozen should be the maximum number. The list on the next page gives some of the most common benchmarks, together with their sources.

Joiner—Another "must" for the economist is to join at least one of the statistical, economic or mar-



Some Basic Sources of Information

- **Survey of Current Business (Department of Commerce)**
- **Other Department of Commerce publications**
- **Federal Reserve Board publications**
- **Bureau of Labor Statistics publications**
- **Bureau of the Census publications**
- **Bureau of Mines publications on basic mining output**
- **Department of Defense summaries of defense obligations**
- **Securities & Exchange Commission**
- **Bureau of Agricultural Economics**
- **20th Century Fund**
- **National Industrial Conference Board**
- **National Bureau of Economic Research**
- **Brookings Institution**
- **Trade Associations**
- **Business Publications**



Most Commonly Used Business Indicators . . .

(Source in Parentheses)

- **Gross National Product and National Income (Department of Commerce)**
- **Industrial Production Index (Federal Reserve Board)**
- **Wholesale and Basic Commodity, Consumer Price Indexes (Bureau of Labor Statistics)**
- **New Plant & Equipment Expenditures (Securities & Exchange Commission, Department of Commerce)**
- **New Orders, Unfilled Orders, Inventories and Sales, monthly basis (Department of Commerce)**
- **Employment and Unemployment (Bureau of the Census)**
- **Credit Conditions, Bank Loans (Federal Reserve Board)**
- **Retail Sales, Personal Income (Department of Commerce)**
- **New Construction (Department of Commerce)**
- **New Housing Starts (Bureau of Labor Statistics)**
- **Steel Production (American Iron & Steel Institute, STEEL)**
- **Auto Output (Ward's Automotive Reports)**

keting associations. Good ones are American Management Association, American Statistical Association, American Marketing Association, American Economic Association and the Sales Executives Club. All these societies have local chapters in principal cities where are available good programs to help educate neophyte economists and keep more experienced men up to date. What's more, those organizations are handy advisers in case you are trying to hire a more experienced economist, for members can give you advice on who is available in government or who are the bright young men coming up in other companies.

Still another requisite for your economist is to keep up with his business reading. Good business magazines all carry a lot of material helpful in forecasting. The Survey of Current Business, Facts for Industry, Federal Reserve bulletin, Bureau of Labor Statistics publications, individual bank letters, National Industrial Conference Board and American Management Association publications all should be studied regularly. If your business is related to capital goods, a pamphlet on business trends in machine tools put out occasionally by National Machine Tool Builders' Association is helpful. A monthly survey of business conditions compiled by National Association of Purchasing Agents also makes interesting reading.

Ready—Once your economist has been hired, learned the fundamentals of your business and gathered the start of a list of basic indicators, he's ready for his first forecasting jobs. Those initial ones should be simple; indeed, all forecasting should be reduced to the bare essentials. An economist for an automotive supplier reports that his first job was to predict how many four-door and how many two-door autos would be produced in the next year. He did it by getting some auto executives' predictions on total car production for the next year and then going back over some Automobile Manufacturers Association figures on two-door versus four-door production in the past. He figured what the trend was in the past, then related it to the estimated future output to come up with the information for his company which made door handles.

Three Approaches

There are three basic methods of making a forecast: The economist can take the consensus of company executives, sales managers and compile it into a nonnumerical prophecy. He can send out a questionnaire to consumers of his company's product and get their nonnumerical opinion of future trends. Or he can try a statistical approach. The simplest statistical method is by ratio—1952 sales were 5 per cent ahead of 1951; then 1953 volume will be 5 per cent ahead of 1952. The more sophisticated and now more common method is the correlation. General business conditions are forecast, then related to the individual company.

Advantages — The first basic method is fast and easy, but decidedly general. The second method is usually reliable, but it's slow and expensive. The best purpose for both is as an occasional check on conclusions found by other methods. Most economists today rely most heavily on the correlation statistical approach. Greatly simplified, the technique is that of the forecaster who wanted to know how many automobile door handles would be required, figured that, then related it to his own company's position in the industry. Any good forecaster coming out of college should be as familiar

with statistical correlation techniques as you are with basic arithmetic.

That subject won't be reviewed here, but some good books and articles on statistical methods are these: "Sales Forecasting," a phamphlet put out by National Industrial Conference Board which gives case histories on forecasting; *Forecasting for Profit* by Wilson Wright, a well-known analyst for Procter & Gamble Inc. and papers presented at the annual marketing research conferences of the American Marketing Association's Michigan, Northwestern Ohio and Cleveland chapters at Ann Arbor, Mich., Mar. 16, 1951, and May 9, 10, 1952. (It's entitled Michigan Business Papers No. 25 and may be purchased for $1 from the University of Michigan Press, 311 Maynard St., Ann Arbor, Mich.)

All Set—Let's suppose that your recently hired economist is now ready to make a full-scale, short-term forecast. He has educated management and been educated himself into company policy. He has established basic indicators, joined a professional society, compiled a good library of periodicals dealing with his field and proved himself a master of statistical techniques and a man of good judgment. Using all that background and aware that forecasting is an art not a science, he comes up with this prophecy (which, incidentally, is the consensus among bankers, business executives and economists whom STEEL interviewed regarding the business trend for the next six months).

Forecast for 1953

Despite a marked return to competitive conditions this year, metalworking sales will hit a record $121 billion in 1953, compared with $112 billion in 1952 and $100 billion in 1951 (see the accompanying chart).

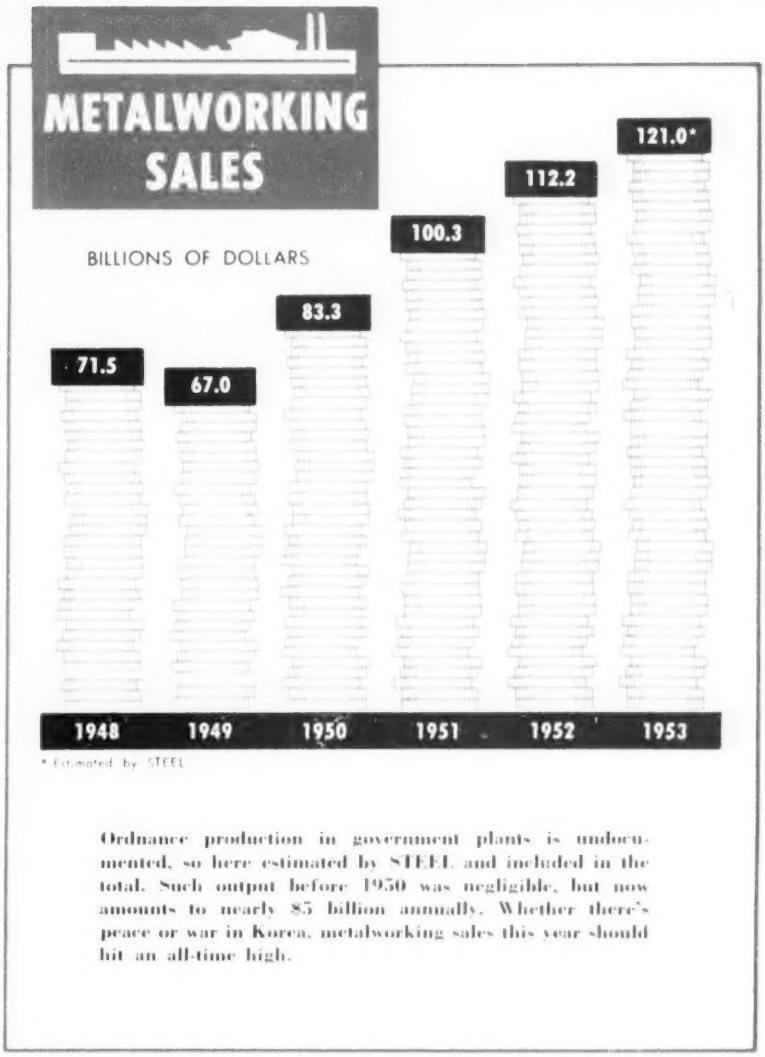
Second Half Slip—If the rate of sales for the first quarter were to continue at the same rate, the volume for the year would be even higher, but odds are that industrial activity will decline somewhat for the second half, although it will still be high. Third-quarter production will be down because of vacations and other seasonal factors. Fourth-quarter levels will decline still more.

Available this year to make possible those peak metalworking sales will be more metal than ever before in history. 118 million tons of steel ingots, 1.6 million tons of copper and 1.5 million tons of aluminum. A balance between supply and demand has already been achieved in copper; it will come soon (probably this summer) for aluminum; and it will arrive in the fourth quarter for steel.

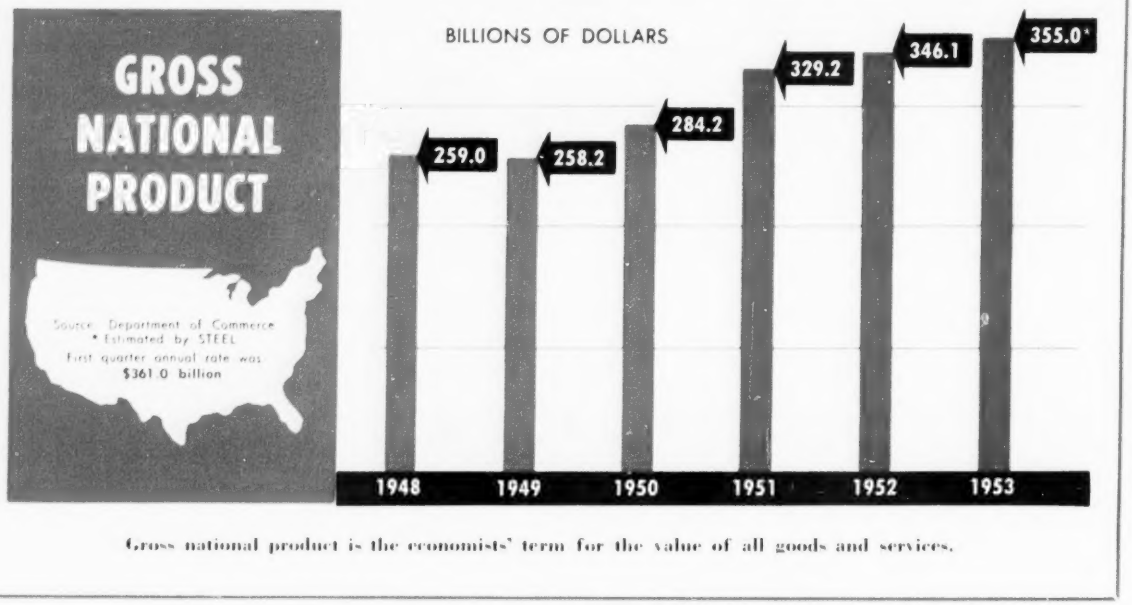
Still Problems—The general balance foreseeable in the major metals doesn't mean that every product will be available at a moment's notice. Steel bars are very tight, may be even difficult to obtain by the end of the year. The supply of aluminum forging stock is still unusually stringent.

A peak $33 billion worth of construction, some $45-$50 billion worth of defense expenditures and production of 5.5 million passenger cars in 1953 are the major factors buttressing demand for the record 121 million tons of steel, copper and aluminum that can be produced this year.

Free Economy—For the rest of 1953, the absence of distribution controls on those metals, except for military and atomic purposes, will permit industry to operate in as free an economy as has existed since the summer of 1950. There may be some confusion in shifting from the old Controlled Materials Plan to the freer Defense Materials System, but most serious



Ordnance production in government plants is undocumented, so here estimated by STEEL and included in the total. Such output before 1950 was negligible, but now amounts to nearly $5 billion annually. Whether there's peace or war in Korea, metalworking sales this year should hit an all-time high.



Gross national product is the economists' term for the value of all goods and services.

transition problems should be solved by September.

Sky-high construction is possible in 1953 despite a decline in private industrial building. Some 6 per cent more work was done in the first four months of this year than in the same period in 1952. All last year some $32 billion worth of new construction was put in place, compared with $31 billion in 1951. The 20 per cent drop expected in private industrial construction will be more than offset by increased expenditures for the military, public utilities, roads and those construction classifications which were restricted in 1952.

More Defense Money — All the talk and debate about the defense budget submitted by President Eisenhower obscures the fact that defense spending, for the next six months at least, will go along at terrific rates of between $900 million and $1 billion a week. By the start of the next fiscal year, July 1, the Defense department will have available for spending almost $100 billion. An estimated $62.6 billion will be carried over from past appropriations, and new money authorized will amount to more than $36 billion.

Of that total figure, the Air Force accounts for more than $40 billion; the Army will spend almost $31 billion; and the Navy will come in for $26.5 billion.

Peak Passed—If the U. S. auto industry were to continue at first-half production rates it would set new records, but chances are that output will decline from here on in, although it will still be good—about 5.5 million cars and 1.2 million trucks in 1953, compared with 4,332,000 cars and 1,222,000 trucks in 1952.

Sales thus far this year have been good, but not quite as sensational as production. Stocks are up to around 13 per dealer now; watch for greater caution by the automakers.

GNP Soars—All the industrial activity in the first half has sent the gross national product value of all goods and services zooming to a $360 billion annual rate. That probably won't last, but even when the full year's figures are in the total will be about $355 billion, compared with $346 billion in 1952 (see the chart). Similarly, the Federal Reserve Board's industrial production index—hovering around 240 per cent of the 1935-1939 average during the first half, compared with the 217 average in 1952—can't be expected to maintain that pace for the rest of the year. Even so, that index may average 230-235 for the year.

Personal spending is ahead of year-ago levels thus far, but will decline over the rest of the year. Prices, as indicated in the chart on the next page, are reasonably steady and should retain that characteristic for the next six months. Employment, now in excess of 61 million, will drop a little in coming months, but never below 60 million.

Besides construction and automobiles, other metalworking industries will fare about this way for the remainder of 1953:

Railroads — Freight car order backlogs were 120,251 in January, 1952. Now they've slid to nearly half that, with awards averaging less than 5,000 a month since the first of the year. There's not much chance of marked improvement over the next six months.

Shipbuilding — This minor segment of metalworking will continue at about the same pace over the rest of the year. It consumes only about 1 million tons of steel a year.

Aircraft — Peak activity is the word here, despite talk about budget cuts. Some 12,000 military aircraft will be turned out in 1953, compared with a little more than 9,000 in 1952.

Oil and Gas Equipment — The peak in expansion comes this year.

Total output of tubular goods in 1953 will hit 1,780,000 tons.

Mining, Quarrying and Lumbering—Watch for continued high activity here, although slightly under 1952 levels.

Machinery and Tools—Production is heavy, but a little under 1952, which will probably stand for some time as the high water mark for this industry. Machine tool output was worth $1.2 billion in 1952, but won't be quite so sensational this year.

Electrical Equipment—All the stops are out to produce the maximum of this type of apparatus. Electronics makers in 1953 will probably surpass the $4 billion volume they did in 1952.

Appliances—The story here is the same as for automobiles — good sales that are not quite as excellent as sensational production in the first half. Even so, dollar sales this year can set a record of $3.7 billion, but unit output will be down from the records set in 1950.

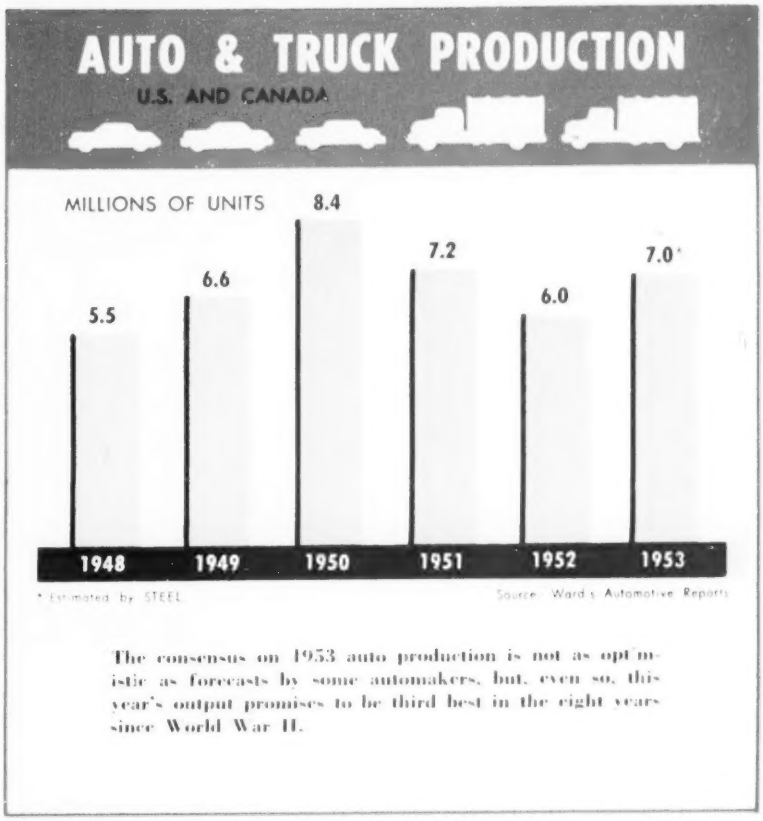
Farm Machinery — Manufacturers are doing a little bit better than they expected, but they still will have trouble matching the $2 billion worth of business in 1952 and have no chance of surpassing the peak $2.2 billion volume achieved in 1951.

Use Your Forecast

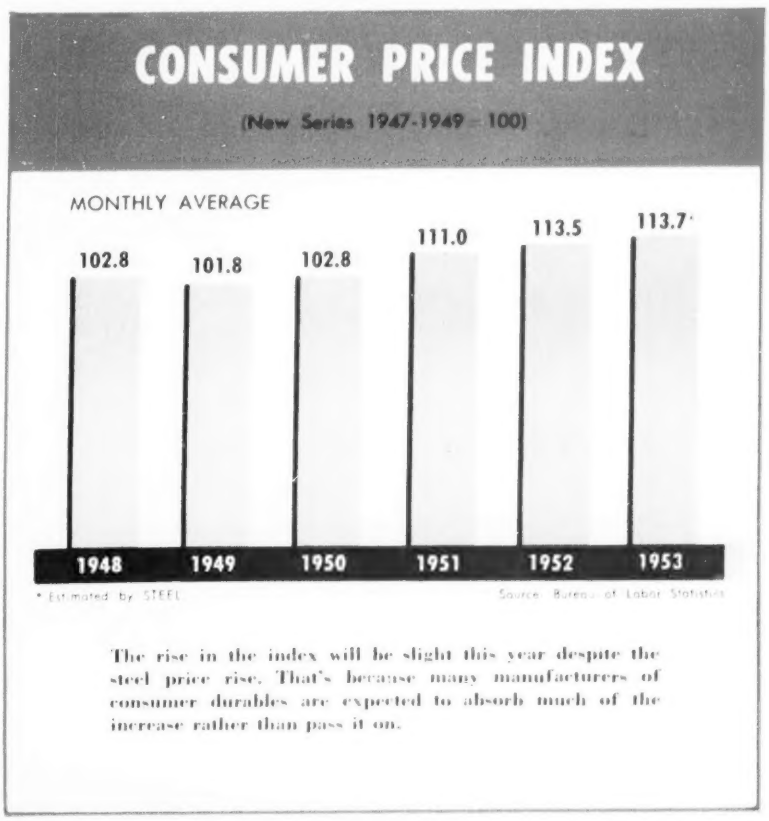
Your economist's short-term forecast is probably the forerunner of many more like it. The number of long-term jobs he has to do will be far less numerous because they're more difficult to do, more subject to error and have fewer practical uses.

Practical—The preceding short-term one can be used in many ways. Let's suppose your company makes gears. Your economist has determined that you supply 2 per cent of the automotive market, 10 per cent of the farm equipment business and 5 per cent of the construction machinery demands.

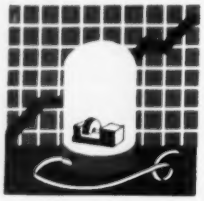
Methods of learning how much of the market you cover require more common sense than statistical know-how. It can be done by simply asking your customers how



The consensus on 1953 auto production is not as optimistic as forecasts by some automakers, but, even so, this year's output promises to be third best in the eight years since World War II.



The rise in the index will be slight this year despite the steel price rise. That's because many manufacturers of consumer durables are expected to absorb much of the increase rather than pass it on.



Check Here for Good Business Forecasts . . .

- **Have you hired a good man or service to do them?**
- **Are the forecasts simple?**
- **Do you keep your number of basic indicators to 12 or less?**
- **Is top management educated as to the meaning of the indicators and terms used?**
- **Is your forecaster free to operate across the top of your operations or is he restricted in his scope?**
- **Does your forecaster report directly to the president, or is he vaguely attached to some department?**
- **Is your forecaster free to revise his predictions within reason or is he nailed rigidly to everything he prognosticates?**
- **Does your forecaster possess sound judgment?**
- **Are the forecasts used?**
- **Do you realize that forecasting benefits are intangible, but nevertheless valuable?**

much of their business your competitors are getting; or by careful studies of your competitors' annual reports. Or gimmicks can be employed. It's a common practice among appliancemakers to attach a warranty to their products requiring that the buyer return the warranty within ten days of purchase to the manufacturer to assure that the warranty becomes valid. That warranty, although perfectly bona fide, has a forecasting function as its real purpose, not a legal one. The warranty goes back to the appliancemaker's commercial research department and is designed to determine how many of the company's products are being sold and how many are stuck in dealer's stocks.

Tie-In—Once your forecaster has determined how much of the market you cover, all he need do is correlate his general business findings with your company's individual position. If you have 2 per cent of the automotive gear market and if auto production is going to rise about 10 per cent, then you can figure what your sales should be, provided you are hanging on to the same proportion of the market that you did a year ago. By correlating construction machinery sales to construction, and in turn linking that up with your own position in the construction machinery business, you can figure what you should do in this field, too. The same technique can be used to calculate what you will do in sales to farm machinery makers. The prognostication on defense expenditures is pointed because defense business accounts for about 10 per cent of your company's volume.

Although predicting defense volume is about as risky an activity as ever to confront an economist, he can at least make general forecasts that can help your sales department.

Specific Aid—The general business forecast and its correlation with your company's particular situation can help with many specific problems, too, such as these:

What sales quotas should be set for the next six months? The forecast can give the answer.

The purchasing department wants to know if it should accept escalator pricing provisions in one of its contracts. The forecast indicates that prices will be steady for six months, so the escalator provision is probably safe.

The advertising director wants advice on his budget request. The forecast indicates increased competition and emphasis on selling ahead. So, a bigger advertising budget would be in order.

The executive vice president thinks inventories are too high. Are they? The forecast indicates better materials availability and steady prices. Therefore, it's probably safe to cut down on inventories.

The personnel manager is worried about the continuing shortage of skilled and semiskilled labor. What's the prospect for improvement? The forecast indicates a slight decline in employment over the next six months. Chances are poor for any easing in the supply of skilled workmen, but semiskilled help should be more readily available in coming months.

"Forecasting can make a great contribution to the welfare of any business," says Thomas G. MacGowan, manager, Marketing Research Department, Firestone Tire & Rubber Co., Akron. Neither he nor any other competent forecaster claims that it's the last word in answering your business problems. Forecasting can never be the last word because it's an art, not a science. But it can be a real tool by which management will get better information so that it can come up with better decisions.

Farms Turn Mechanical

The trend augurs well for the long-term outlook in farm machinery sales

MECHANIZATION has had such an impact on farming in the past two decades that present slow sales of farm machinery are not regarded as dangerous to the industry. Although the immediate outlook for equipment sales is mediocre farmers have made much greater use of machinery in the past 20 years and should continue to do so.

Output per man-hour on the farm in 1951 was 86 per cent above that of 1930. Hourly output has increased by 45 per cent since 1940. In announcing these figures, the Department of Agriculture states that, if present-day production conditions prevail, national farm production in 1955 could surpass 1950's total by 20 per cent.

Applications Increase — Wider adaption of farm machinery to many new uses is responsible for optimistic long-term forecasts in farm equipment production. In 1930 there were only 920,000 tractors on American farms. By 1951 that number had climbed to 4,170,000. During the past decade, the number of trucks on American farms has more than doubled, while grain combines have increased more than three times.

Expanding Uses—Potential uses of agricultural machinery continue to grow as farmers and experimental stations find increasing opportunities to employ machines. Some of the most notable new applications for farm machinery are in mechanical weeding of sugar beets, power equipment for pasture improvement, mechanization in cranberry production and a tractor arrangement for weeding vegetables. Mechanization of common field and vegetable crops is well advanced.

Looking Ahead — Planning for the future, research at state experiment stations in the fiscal year 1951-52 included about 4500 specific lines of study financed wholly or in part by federal-grant funds and about 5700 lines of research under nonfederal funds available to the stations.

Demonstration Made the Hard Way

William H. Albee, California inventor of the "Rolligon" tire, demonstrates unlimited faith in his invention by having an Army experimental truck equipped with the tires roll over his body. Low ground pressure permits the odd vehicle to maneuver in soft sand. The Rolligon tires are driven by friction rollers

Metropolitan New York—Colossus of Industry

	Number of establishments*	Production workers only
Primary metal industries	435	32,045
Fabricated metal products	2,970	69,551
Machinery, except electrical	2,095	71,809
Electrical machinery	920	90,685
Transportation equipment	334	65,846
Instruments & related products	814	37,114

* As a rule, single plants or factories, not necessarily a business unit or company.
Source: Bureau of the Census, Census of Manufactures: 1947.

NEW YORK metropolitan area is America's biggest industrial market.

That may come as a surprise to those whose favorite reading material is not the *Census of Manufactures*. As defined by the Census Bureau, the United States has 240,881 manufacturing establishments, of which 48,304, or 20.1 per cent, are located in an area within roughly a 50-mile radius of New York City. About 1.3 million production workers are employed by those manufacturers.

Metalworking's Share — Basic metalworking accounts directly for 7568 of the area's total (see table above). In addition, there are 5190 miscellaneous manufacturing establishments, many of which are members of America's largest industry.

For years, New York has been known as the financial center of not only the United States, but also the world. Many companies maintain national procurement offices in the area although they have no manufacturing facilities there. When combined with the lesser-known facts about its industrial activities, it becomes evident that the area exerts more influence on nationwide manufacturing than is commonly thought.

Chicago is a distant second in both establishments and labor.

That's Not All—In a report prepared by the *New York Times*, it is pointed out that not only is its market area the biggest industrial center, but it also is the biggest user of products and the world's largest communication center. There are 190,987 retail stores selling over $14 billion worth of goods. The port of New York handled almost 33 million long tons of exports and imports in foreign trade in 1952.

Windows of Washington

By E. C. KREUTZBERG *Washington Editor*

Only 20 labor contracts of 2600 in the U. S. analyzed by the Bureau of Labor Statistics have provisions resembling the guaranteed annual wage the CIO is expected to demand

THE DRIVE of the CIO to push the demand for the guaranteed annual wage in the upcoming collective bargaining sessions with the automotive and steel industries is casting the spotlight on a survey of labor contracts made by the Bureau of Labor Statistics.

The survey—although published in May, 1952—is still timely since the contract situation hasn't changed appreciably, say BLS spokesmen. It is an analysis of 2600 contracts between labor unions and management.

Little Protection—Of the 2600 contracts surveyed, only 184 agreements, or 7 per cent of the total, provided for guaranteed annual wages—most of them for much less than a full year's pay or for only certain groups of workers. Many of the guarantees provided for sharing the work during slack seasons, an advantage to workers with little seniority who are usually the first laid off when work slackens. All the guarantees were effective only for the term of agreement, usually less than a year, thus providing little or no protection against prolonged unemployment.

Wide Open—Only 20 contracts of the 2600 analyzed contained guarantees bearing a resemblance to what is expected to be demanded by the CIO. These 20 contracts, with guaranteed wages for a substantial part of the year, were chiefly in industries which provide the consumer with his daily needs —such as meat-packing, soapmaking, service and distribution.

Defense Secrets Classified . . .

A lot of news and information heretofore classified will be releasable under an executive order to be issued by President Eisenhower. In addition to permitting the public to be better informed, it will enable manufacturers to release more information about their defense contracts. In "proposed" form it has been distributed to all government departments and agencies and will become effective after bugs have been removed.

In a nutshell, the order provides that only vital defense secrets may be classified. It replaces the present vague and broad descriptions of security information with exact definitions. It provides for three classifications — "Top Secret," "Secret," and "Confidential." It deprives 29 government agencies of the present authority to classify information and in 16 other agencies confines that power to the head of the agency. Agencies which will continue to have full power to classify defense information may exercise the authority through a limited number of designated officials. Such agencies, of course, include Department of Defense, State Department, Mutual Security Agency, Office of Defense Mobilization and others that are primary in the defense program.

Amendment On the Way

S. J. Res. 3, to amend the Constitution to prevent the President from seizing private property "other than in a manner prescribed by act of Congress" has been passed by the Senate and awaits House action. The move is the outgrowth of President Truman's seizure of the steel industry.

Cost of Prejudice . . .

Secretary of Health, Education & Welfare Oveta Culp Hobby estimates racial prejudice costs the government $15 billion to $30 billion annually. She reasons that if those discriminated against were allowed to reach their full potential they would "expand the domestic market for the goods we produce" and would pay more in taxes on the better wages they would earn.

Agency for Handicapped . . .

Employers generally should be interested in a new series of hearings to be started by the House Labor Committee about July 6, to consider authorization of a new federal agency to devote itself to problems of handicapped persons.

There are an estimated 30 million handicapped citizens who, by adequate medical treatment, education and training, could become a national asset, says Paul A. Strachan, president, American Federation of the Physically Handicapped, 1370 National Press Bldg., Washington, who is heading the drive.

"When we consider that for the past 12 years approximately 2 million citizens have been injured each year in industry alone, with an average of 90,000 rehabilitated, the 'human scrap pile' increases each year," says Mr. Strachan. He is prepared to show the committee that the great majority of these handicapped people, if intelligently handled, can again become producers instead of living in enforced idleness on the production of others.

The move is one of concern to industry, which eventually will be called upon in large measure to employ these people.

An Honor for Safety . . .

Under S. 1105, passed by the Senate and now before the House, the National Safety Council would enjoy the prestige of being incorporated under a special act of Congress. It thus would join the American Red Cross, the American Legion, the American War Mothers and other "public service" organizations thus honored by Congress.

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PRECISION STEEL WAREHOUSE, INC., 4425 W. Kinzie, Chicago • Phone: COlumbus 1-2700

Foreign Competition Hurts

How can American manufacturers compete with foreign firms on highly-engineered products on a straight dollar basis, asks Westinghouse as it loses $7 million in contracts

SHOULD WE, or should we not, have free trade?

Westinghouse Electric Corp. says: Let's not have indiscriminate free trade in the U. S. The company speaks from experience because it has lost more than $7 million in business to foreign firms since Jan. 1, 1953, on which it was the low domestic bidder.

Labor High—Foreign firms are underpricing Westinghouse — and other American companies—in highly engineered, heavy-duty generator and switchgear equipment where labor costs represent more than half the final cost of the product. "No quarter" is asked in mass-produced items, but Westinghouse President Gwilym A. Price says that U. S. industry cannot compete with subsidized foreign companies, paying far lower wage rates, in the heavy power equipment field. "That may sound like a relatively small part of the total electrical equipment business of the U. S., but it is concentrated in one segment of the Industry. . ."

Average wage rate in Switzerland is 53 cents an hour; in England, 43 cents; in France, 41 cents; in Italy, 31, and is an average of $2.10 for Westinghouse workers "with the East Pittsburgh (Switchgear and Transportation & Generator Divisions) average even higher than that."

Tax Cycle—Westinghouse was finding it rough, too, to compete with foreign firms on a dollar basis while corporate taxes are higher in the U. S. than in the European countries. As John Hodnette, Westinghouse vice president in charge of industrial products divisions, put it: "Westinghouse pays high taxes to the government, so that our government can send that money to foreign governments, so the foreign governments can subsidize their companies to take business away from Westinghouse so that Westinghouse can't give money to our government."

When the corporation recently lost a $2-million order for waterwheel generators to Oerlikon, a Swiss company, the action pointed up still another hurdle which domestic manufacturers must clear to compete with foreign firms on high-labor-cost products. Westinghouse had submitted a bid with a 20 per cent "escalator clause," common practice for American firms on contracts where delivery may extend from 12 to 36 months ahead. The bid calculated at the current price level was actually $55,000 lower than the Swiss, but the Interior department figured the Westinghouse bid at its highest possible cost, making the Swiss low by a little more than $300,000. No American firm could possibly quote a firm price on such an extended contract. A foreign, subsidized firm could.

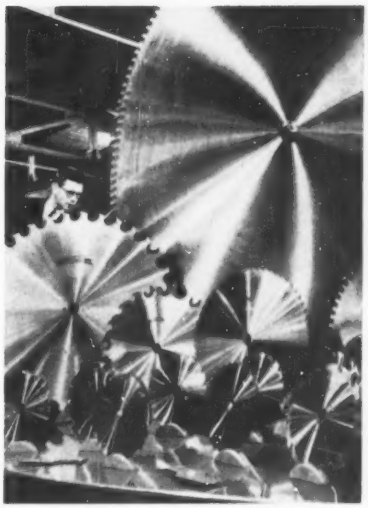
Free Trade Dilemma in Detroit

Detroit, from whence has eminated some highly publicized free trade talk of late, has had the hot potato thrown into its own lap, and it's still juggling. The city's Public Lighting Commission must decide whether to award a $1.3-million contract to the low bidder, Brown, Boveri Co. Ltd., of Switzerland. A New York firm of Burns & Roe is now checking over the Swiss equipment to see if it meets specifications. If it does, watch for more maneuvering.

Romania Makes Refractories

Romania is now producing refractory bricks for the iron, steel and glass industries for the first time in the history of the country.

Dolomite, which Romania has in plentiful supply, has been substituted for magnesite in the new refractory bricks which can withstand temperatures up to 3600° F and pressures up to 1000 kilograms per square centimeter. The new refractories have three times as much resistance to thermal shock as imported magnesite bricks, say the Romanians.



United Press

See Saw in Toronto

A visitor at the Canadian International Trade Fair was dwarfed by huge saw blades on exhibit. This exhibit of the Simonds Canada Saw Co. Ltd. was part of the show which drew buyers from all over the world

MSA Shifts Emphasis

Emphasis quickly shifts from defense support aid to productivity aid in the Mutual Security Agency's activity. Belgium recently became the eighth Western European country to launch an expanded agricultural and industrial productivity program in conjuction with MSA. Others are the United Kingdom, Western Germany, the Netherlands, Denmark, Italy, France and Norway.

In other parts of the world, John F. Schnur, foundry technologist at Armour Research Foundation, Illinois Institute of Technology, is in India, where he will study foundry practice and make recommendations for modernization of techniques. Armour Research Foundation is also sending George D. Thomas to Pakistan to assist in the modernization of that country's 400-year-old machine tool industry.

Export-Import Notes

The new administration's tight credit and economy policies are changing operations of the Export-Import Bank. Long-term development loans at low interest rates are out; short-term grants are in.

UNMATCHED TESTING FACILITIES...

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In testing laboratory or manufacturing plant, Hyatt's facilities are second to none. Continuing research in methods and materials, and exacting inspection with the finest in modern equipment, has made the Hyatt name a synonym for "highest quality." That's why Hyatt Roller Bearings are so widely used in tables, cars, cranes and other steel mill equipment. Design engineers know that Hyatt bearings ease shock loads, extend equipment life and reduce operating costs. Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey.

HYATT ROLLER BEARINGS

By FLOYD G. LAWRENCE *Detroit Editor*

Mirrors of Motordom

Auto companies will spend $500,000 trying to cut down high labor turnover rates which may cost them as much as $53 million in 1953

DETROIT

LABOR TURNOVER cost the auto industry more than $21,739,200 last year.

That figure is a minimum based on average employment of 647,000 persons and a monthly turnover rate of 2.8 per cent at $100 per quit. Most experts agree that the cost is more than $100 every time a worker puts on his hat and slams the door; one estimate runs as high as $281.

Doubled Quits—This year average monthly employment stands at over 800,000 persons and the quit rate is more than double last year's. If things continue as they're going, the auto firms stand to lose over $53 million in mad money during 1953, and that kind of scratch constitutes a problem in any industry's profit and loss statement.

The painful part of the picture is that the automakers figure when you're scraping the bottom of the labor barrel slivers can't be avoided. Turnover is traditionally highest in new plants or in times of high production. Today the auto companies have both and the workers have their pick of the jobs. The employers, conversely, do not have their pick of the workers.

Pouring In—The mental and physical 4-fs of industry are being hired wherever they can be found and individuals whose only previous manufacturing experience was running a still are pouring into Detroit like moonshine from a bursted vat. Analysts figure that newcomers to Detroit usually bounce from job to job about three times during their first three months. At the end of this time they have either found housing for their wives and settled into a job or have headed back to the hills.

In either event they constitute an unstable 30 per cent of the auto worker population which the personnel departments figure is the price of high production. But turnover among the remaining 70 per cent is a problem that the auto manufacturers hope to solve for the future through intensified efforts today.

The Point—The question the automakers seek to answer is simply: Why does a worker quit? But the answer to this question when found will go far toward explaining absenteeism, productivity and morale problems as well. Research along these lines is being conducted by most of the major auto companies today, frequently in conjunction with universities and colleges. Startled workers are finding their opinions and attitudes investigated, exit interviews and follow-up questionnaire work are being intensified, and departments with high turnover are being compared microscopically with similar departments where turnover is low.

The work is only begun and the one thing certain is that the answer is complex. But even in the mist of dawning investigation the shape of some of the salient facts can be discerned. Perhaps the most significant of these is evidence indicating that the immediate supervisor is the most important factor in whether an employee at any level will quit.

The Key—In the now famous "My Job Contest" conducted by General Motors among its employees in 1947, 47.9 per cent of the 174,854 entrants listed supervision as a factor in liking their jobs, more than any other item. Associates were listed by 41.2 per cent of the entrants while wages were third with 40.9 per cent. Far down the list were working conditions and fringe benefits.

The significance of these findings lies in the fact that further investigation is tending to confirm the relative importance of these factors in much the same order as they were listed by the employees

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themselves. In one plant, for example, research has shown that one department has a turnover of only two persons while another department in the same plant where the same work is done by workers from the same area is undergoing a turnover of 80 persons. The one variable in the situation is the foremen.

Foremen Count—Such firms as Ford Motor Co. have recently adopted foreman training programs on the growing strength of findings confirming the foreman's importance in worker contentment. Other companies are investigating the characteristics that make a good foreman through personality tests as a guide to foreman selection. Supervision on up the line is getting the same investigative treatment.

Techniques to insure that the worker knows just how he stands on the job are also being tried. One firm is experimenting with a commendation-reprimand system. Somewhat like a bank balance, entries are recorded for the worker when he manifests outstandingly good or poor behavior in connection with the job. He knows the number of good or bad marks at all times. He knows how he can better himself if he wishes since commendations are the key to promotion. Under this system in its initial trial, grievances filed by workers feeling they had been denied promotion unfairly were cut 75 per cent.

Surprises — The fetish of good working conditions providing the key to turnover a la chartreuse tiled latrines and colored lighting is being put in its proper perspective too. Researchers are finding that good working conditions do not of themselves bring about low turnover and that in many cases the lowest turnover rate is found in the most distasteful departments in the plant.

The research is only begun, but even preliminary findings indicate that management must begin to put back into the job what mass production has taken out of it—recognition of extra effort and skill, a clear path of progress and security and a running appraisal for the worker of how he stands. These are the characteristics that a good foreman of himself does much to supply and the hallmarks of a secure, productive and stable work force.

Price To Pay—The less than $500,000 the auto companies will be paying for research this year seems small compared with the $53 million in labor turnover costs expected this year. But the return on their investment tomorrow promises to be large both to themselves and to all industry.

Auto, Truck Output

U. S. and Canada

	1953	1952
January	612,815	424,559
February	623,793	464,577
March	752,474	525,024
April	782,453	570,464
May	685,396	542,559
June		542,478
July		226,134
August		322,755
September		595,715
October		656,767
November		548,782
December		569,715
Total		5,989,509

Week Ended	1953	1952
May 23	162,447	127,759
May 30	125,868	104,935
June 6	134,619	128,837
June 13	166,832	130,574
June 20	170,311	129,353
June 27	173,000*	124,337

Sources: Ward's Automotive Reports. *Estimated by STEEL

Car of the Week

A week spent driving an air conditioned Cadillac Series 60 Special Fleetwood sedan reveals that this wagon would undoubtedly make a delightful second car for any Willys owner, and that the "Standard of the World" slogan is more than advertising modesty.

Certainly in an amazing degree the Cadillac exudes the virtues of the American automobile. Handling and cornering are startlingly good in a car of this size and weight; acceleration both in passing on the open road and in traffic light drags stands well up the list; and ride proved its excellence on a 457 mile Sunday drive that was genuinely untiring. Interiors are plush to the nth degree and visibility is very good.

On the other side of the ledger was an annoying glare from the dash cowl into the windshield and a peculiar characteristic in acceleration from about 20 miles per hour. At this speed third gear is rather sluggish while the downshift to second is accompanied with plenty of go but an annoying jerk as the gear cuts in. Power steering does an excellent job making the car deceptively easy to park but makes possible a reduction in steering ratio for better control on the open road which has thus far not been utilized. It is reported that such a reduction will be offered next year as power steering crowds 100 per cent installation.

Perhaps the Cadillac can best be summed up as a car that scores remarkably near the top in every department, combining such contradictory virtues as weight and acceleration, soft suspension and good handling, and boudoir interiors with mechanical efficiency. The Cadillac can perhaps be excelled in many of these areas, but the embodiment of so much of so many of these virtues in a single automobile is the Cadillac forte.

Off the Envelope Back

Plymouth celebrated its 25th anniversary June 14.

Lincoln announces air conditioning at $575 for Cosmopolitans and Capris while Ford now offers Bendix power steering at $125 suggested list.

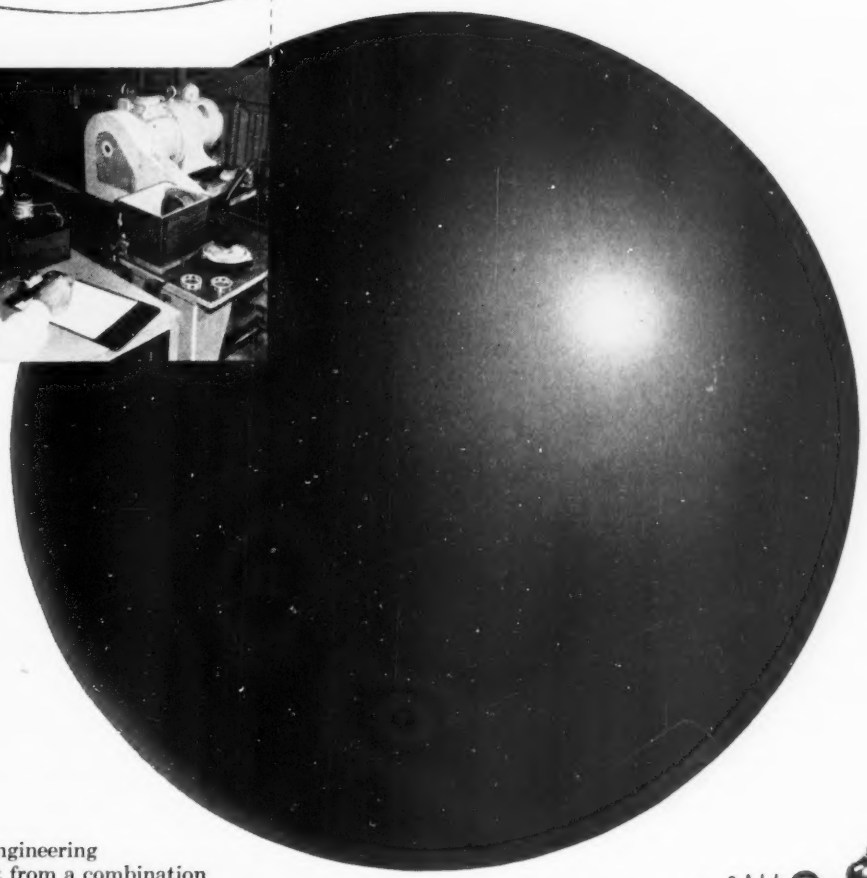
Use of 1600 tons of steel per mile in the New Jersey turnpike heightens metalmen's interest as GM awards Robert Moses first prize in its highway awards essay contest.

A heat-vented tire developed by Seiberling is reported to run up to 60 degrees cooler and give 38 per cent greater performance on trucks.

Volume production of Oilite stainless pressed metal products is being stepped up through new equipment installation at Chrysler. The material is used in bearings, gears, levers, blocks, cams, pulleys and intricate structural parts difficult to machine from bar stock.

Kaiser Motors Corp. will move automotive purchasing, accounting, certain engineering and export operations to Toledo as the first step in consolidation with Willys Motors. During the consolidation period a number of manufacturing operations at Willow Run are being suspended.

Engineering Excellence



New Departure's engineering achievements result from a combination of many talents and techniques. From never-ending research to application advice with 60 years of experience behind it, every resource of New Departure is aimed directly at engineering excellence.

High manufacturing standards hold tolerances, in many instances, to limits measured in millionths of an inch. Scientific inspections make certain that component parts, as well as completed bearings, will perform as prescribed.

New Departure products are found wherever the forces of friction must be defeated. Miniature bearings for delicate instruments or large units for industrial installations, and anything in between, can be supplied by New Departure. Keep your eye on the BALL to be sure of your BEARINGS!

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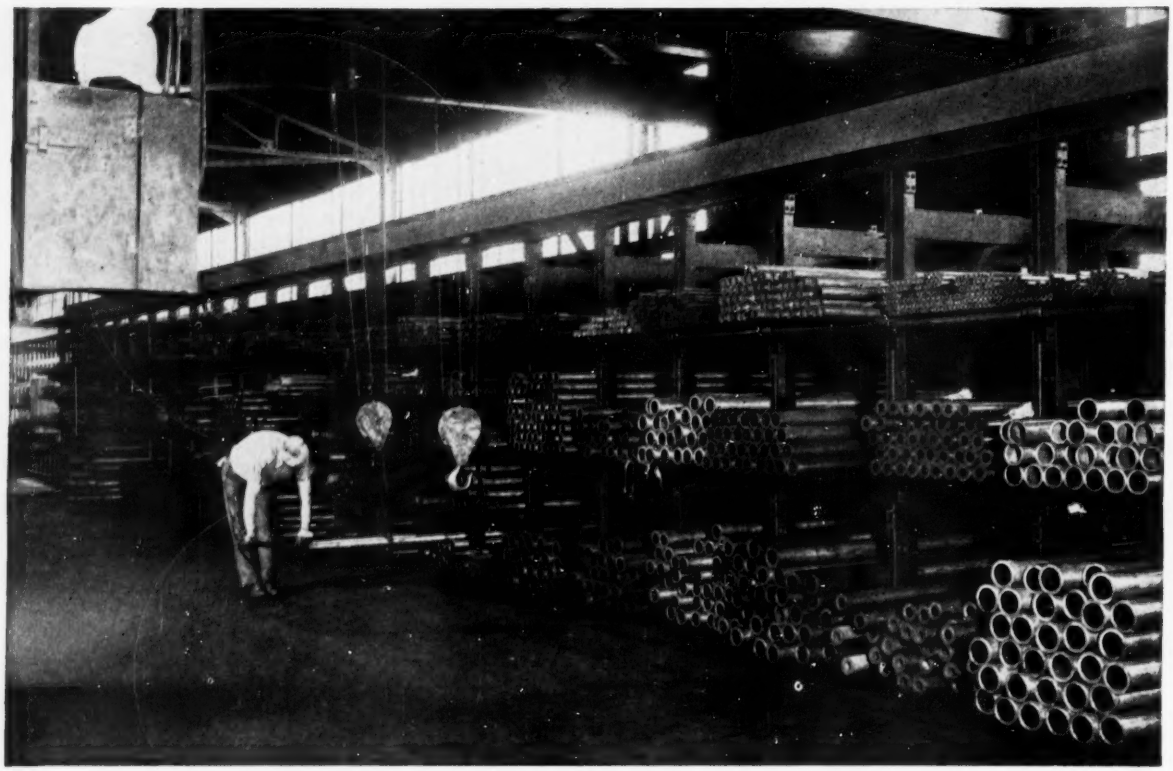
Need 52100 tubing for rush hollow parts jobs? *Order today—we'll ship tomorrow!*



ORDER 52100 tubing today—we'll ship it tomorrow from our mill stock of one hundred and one sizes!

A high-carbon chrome steel manufactured by the Timken Company, 52100 is a through-hardening steel in moderate sections and can often be used in place of more expensive steels. It can be heat-treated to file hardness and tempered back to any desired point.

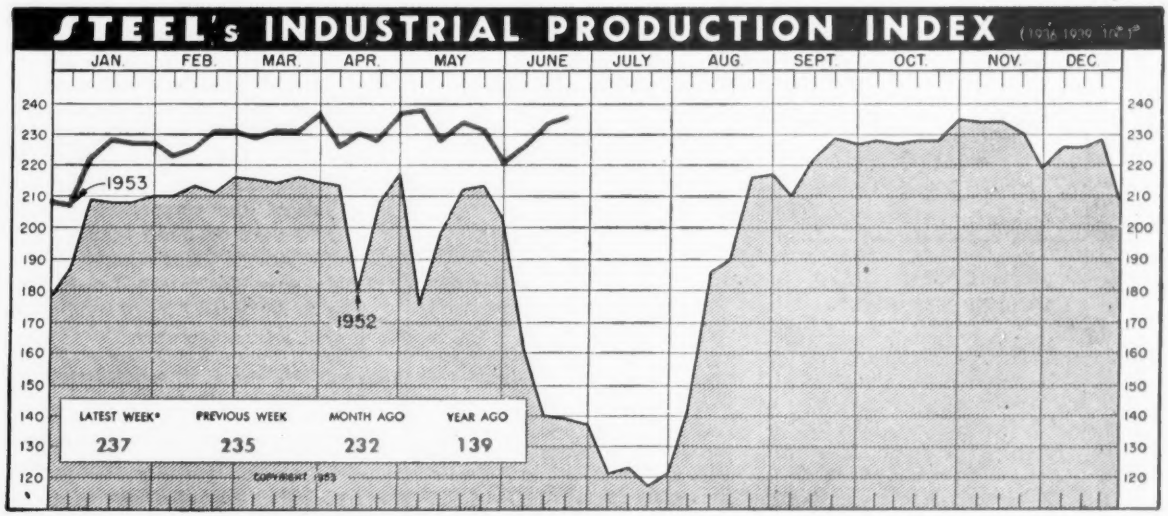
52100 is available in sizes from 1″ to 10½″ O.D. for hollow parts jobs like these: aircraft parts, ball bearing races, pump parts and plungers, collets, bushings, spindles, grinding machine parts and precision instrument parts.

As America's pioneer producer of 52100 tubing, the Timken Company has unequalled experience resulting in uniform high quality from tube to tube and order to order. Rigid quality control checks every step of production.

For immediate delivery of your less-than-mill-quantity orders, write, wire or call The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable address: "TIMROSCO".

YEARS AHEAD—THROUGH EXPERIENCE AND RESEARCH

SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS TUBING


STEEL's INDUSTRIAL PRODUCTION INDEX
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
240 230 220 210 200 190 180 170 160 150 140 130 120
1953
1952
LATEST WEEK* PREVIOUS WEEK MONTH AGO YEAR AGO
237 235 232 139
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*Week ended June 20 Based upon and weighted as follows: Steelworks Operations 35%; Electric Power Output 23%; Freight Car Loadings 22%; and Automotive Assemblies (Wards' Reports) 20%.

Industrial production index edges up 2 points. It would be at a new record high if it weren't for some labor trouble in the auto industry

CONTINUED strength is shown by industrial production in the latest week. Measuring this bulge of industrial muscle, STEEL's industrial production index for the week ended June 20, rose two points to 237 per cent of the 1936-1939 average. But for the blow dealt the independents in the automobile industry by the prolonged strike of one supplier, STEEL's indicator would show the establishment of a new 1953 production record.

Autos at Fast Pace . . .

Nevertheless, automobile output is high, and it is supported by new orders. May marked the third consecutive month that domestic dealers have retailed new cars at better than a 6-million annual rate. This strong sales performance helped in May to reduce the two-year high stock of new cars that dealers had in April. In the used car field a merchandising drive resulted in record-breaking sales in both April and May for a major independent. Even though truck production continues at a reduced level, production of passenger cars and trucks by U. S. and Canadian plants in the week ended June 20, increased 3479 units over the previous week to total 170,311 units, according to *Ward's Automotive Reports*.

Steel Output High . . .

Another big factor in the high index is steel production. For the week ended June 27, the American Iron & Steel Institute estimates that furnaces poured 2,235,000 net tons of steel ingots and castings. Completion of repairs on furnaces is bringing output closer to capacity again but the feelings of men will erratically affect production from time to time as heat walkouts erupt. Concerning the future, a few users of steel, who built up their inventories in anticipation of a strike, are either canceling or spreading out their orders.

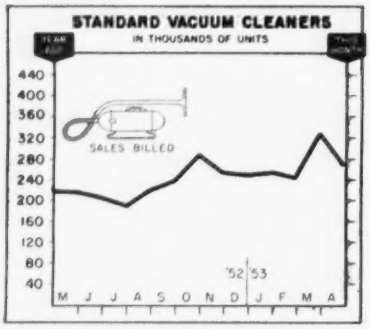
Car Loadings Mount . . .

Loadings of railroad revenue freight mount with the warm weather. During the week ended June 13, the Association of American Railroads says 797,425 cars were loaded. Loadings advanced 2.8 per cent above the previous week and were only 3.6 per cent less than in the same week in the peak production year of 1951. The rise in ore loadings contributed more to this general increase than any other factor.

More Power to All . . .

Not only is electricity the power behind the throne of industrial production but it is also the power within the castle that is each man's home. This feature of compound growth resulted in the distribution of 8,244,852,000 kilowatt-hours of electricity in the week ended June 13, the Edison Electric Institute reports. Electricity is being generated in June at a rate of more than 15 per cent above the same month of last year. Although industrial production in June this year was running about 18 per cent higher than in June, 1952, industry in general suffered more from the steel strike of a year ago and conversely is able to show a greater increase in production.

Large users of electric power are the chief factor in the expanded output. Such users consumed 11.7 per cent more electricity this March than last. On the same basis residential use rose 9.6 per cent. During the ten years ended last February, residential use of electricity more than doubled and the average rate per kilowatt-hour dropped from 3.6 cents to 2.7 cents.

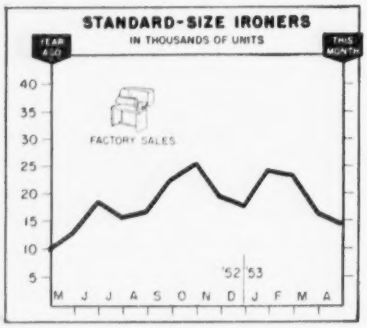


Standard Vacuum Cleaners

Sales Billed—Units

	1953	1952	1951
Jan.	255,886	223,357	282,305
Feb.	246,007	230,226	261,572
Mar.	329,294	290,092	290,242
Apr.	268,548	217,169	227,216
May	252,404	216,969	201,983
June	.....	206,939	194,548
July	.....	188,715	161,002
Aug.	.....	222,413	191,299
Sept.	.....	237,541	210,086
Oct.	.....	292,474	259,469
Nov.	.....	254,297	219,919
Dec.	.....	249,032	230,263
Total	.....	2,841,803	2,729,104

Vacuum Cleaner Mfrs. Assn.

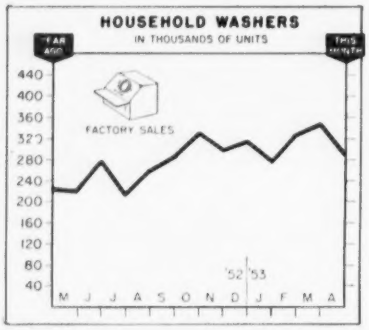


Standard Size Ironers

Factory Sales—Units

	1953	1952	1951
Jan.	24,395	15,636	24,600
Feb.	22,586	17,630	32,400
Mar.	16,066	13,913	34,700
Apr.	14,080	8,938	23,700
May	.....	12,652	24,200
June	.....	17,654	24,500
July	.....	15,025	11,100
Aug.	.....	16,477	17,200
Sept.	.....	22,492	18,300
Oct.	.....	25,204	29,800
Nov.	.....	19,724	20,500
Dec.	.....	16,798	16,900
Total	.....	202,143	277,700

American Home Laundry Mfrs. Assn.

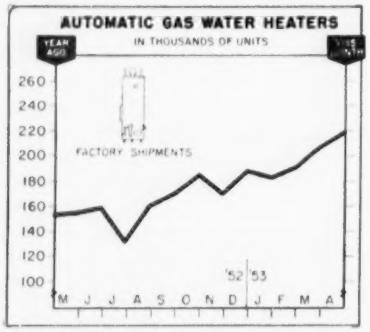


Household Washers

Sales Billed—Units

	1953	1952	1951
Jan.	277,309	213,998	321,092
Feb.	326,604	255,864	341,328
Mar.	345,989	248,431	368,455
Apr.	288,474	217,211	292,193
May	.....	213,668	253,942
June	.....	244,457	273,119
July	.....	207,593	139,799
Aug.	.....	254,537	239,081
Sept.	.....	283,732	313,756
Oct.	.....	327,814	297,210
Nov.	.....	293,079	262,484
Dec.	.....	310,661	218,684
Totals	.....	3,101,045	3,301,123

American Home Laundry Mfrs. Assn.



Automatic Gas Water Heaters

Shipments in Units

	1953	1952	1951
Jan.	184,000	148,700	225,600
Feb.	188,500	145,800	213,400
Mar.	206,400	153,300	223,300
Apr.	218,600	153,300	199,400
May	.....	155,300	167,400
June	.....	159,000	131,500
July	.....	131,300	102,400
Aug.	.....	161,500	124,400
Sept.	.....	171,200	130,900
Oct.	.....	185,300	148,800
Nov.	.....	167,100	143,400
Dec.	.....	178,600	127,200
Total	.....	1,910,400	1,937,700

Gas Appliance Mfrs. Assn.

Charts Copyright 1953 STEEL

Issue Dates on other FACTS and FIGURES Published by STEEL

Construction ..... June 15	Gear Sales ..... May 18	Radio, TV ..... May 25
Durable Goods .... May 4	Gray Iron Castings. June 8	Ranges, Elec. ..... Apr. 13
Employ., Metalwk. . May 4	Indus. Production . June 22	Ranges, Gas ..... May 18
Employ., Steel .... June 1	Machine Tools .... Apr. 27	Refrigerators ..... May 18
Fab. Struc. Steel. . June 15	Malleable Castings. June 8	Steel Castings .... June 8
Foundry Equip. ... June 1	Prices, Consumer. . June 22	Steel Forgings .... June 8
Freight cars ..... June 15	Prices, Wholesale . . June 1	Steel Shipments ... June 22
Furnaces, Indus. . . June 15	Pumps ..... June 1	Wages, Metalwk. . June 22

A bright future awaits the electric utility industry: Use of electricity is expected to increase 50 per cent from 1952 to 1956.

More Electricity Users . . .

Sales of electric ranges, which consume more electricity per year than any other common household appliance, were great enough in the first four months of this year to exceed the comparable period of last year by more than 50 per cent. April's sales slumped from the year's high recorded in March. The same general story applies to household refrigerators.

Electric farm and home freezers are behind only ranges and room air conditioners in consumption of electricity. Their sales also slumped from March to April, but during the first four months of 1953 greatly increased demand caused their sales to almost double those of the same period of 1952. Sales of electric storage water heaters show an increase in sales from March to April and their sales during the first four months were about 30 per cent greater than the comparable period in 1952.

Building a Record . . .

With considerable momentum provided by the expenditures of public utilities, construction in the 37 states east of the Rockies is building up toward an all-time record in 1953 in contracts awarded, F. W. Dodge Corp. says. Nonresidential building, having increased 16 per cent in the first five months over the comparable 1952 span, shows the greatest increase. For the same period, public works and utilities expenditures are up 11 per cent. It is believed electric utilities will account for about 17 per cent of the total amount expended on building in 1953. Residential awards from January through May lag behind these leaders. The residential building increase amounts to a mere 1 per cent.

Uncle's Spending . . .

May construction expenditures ran about 8 per cent behind April's. Federal construction awards made during January-March, 1953, although considerably reduced, did

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Output (per cent of capacity)[2]	98.0	99.5	13.0
Electric Power Distributed (million kwhr)	8,275[1]	8,245	7,254
Bituminous Coal Output (daily av.—1000 tons)	1,560	1,522	1,209
Petroleum Production (daily av.—1000 bbl)	6,512[1]	6,477	7,254
Construction Volume (ENR—millions)	$249.7	$368.7	$305.7
Automobile, Truck Output (Ward's—units)	170,311	166,832	129,353
TRADE			
Freight Car Loadings (unit—1000 cars)	803[1]	797	631
Business Failures (Dun & Bradstreet, number)	167	167	151
Currency in Circulation (millions)[3]	$29,970	$30,003	$28,787
Dept. Store Sales (changes from year ago)[3]	−4%	+6%	+7%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$19,440	$15 944	$19,190
Federal Gross Debt (billions)	$267.2	$267.3	$259.6
Bond Volume, NYSE (millions)	$13.5	$16.6	$12.4
Stocks Sales, NYSE (thousands of shares)	5,512	7,285	5,672
Loans and Investments (billions)[4]	$76.5	$76.0	$74.0
United States Gov't. Obligations Held (billions)[4]	$29.4	$29.1	$32.1
PRICES			
STEEL's Weighted Finished Steel Price Index[5]	187.38	182.82	171.92
STEEL's Nonferrous Metal Price Index[6]	224.7	224.7	221.8
All Commodities[7]	109.3	109.6	111.2
All Commodities Other Than Farm and Foods[7]	113.5	113.5	112.6

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1953, 2,254,459; 1952, 2,077,040. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-1939=100. [6]1936-1939=100. [7]Bureau of Labor Statistics Index, 1947-1949=100.

not alter the expansion trend. Federal spending on building dropped 50 per cent from the last quarter of 1952 and was 15 per cent less than that of the first quarter of last year. Most of the drop from the preceding quarter was in electrification projects and in federally owned industrial plants.

Costlier Living . . .

Although federal expenditures are dropping, higher costs for food and medical care brought about a 0.3 per cent increase in the consumer price index from the first of May to the middle of that month. This was the third consecutive monthly rise. Even so, the cost of living in mid-May had risen only 0.9 per cent above a year earlier.

Price Index Headed Higher . . .

The wholesale price index for all commodities other than farm and foods remained at 113.5 per cent (1947-1949=100). With the recent price increases for oil, gasoline and steel it will start moving upward again.

Future Customers . . .

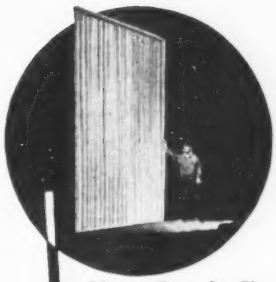
There are more and more customers for the products of the nation's industries. As of July, 1952, the population of the U. S. was 155,767,000, according to the Bureau of the Census. This represents a gain of about 2.4 million over the population in July, 1951. Moreover the population increased more proportionately from 1951 to 1952 than it did from 1950 to 1951.

Employment Rises . . .

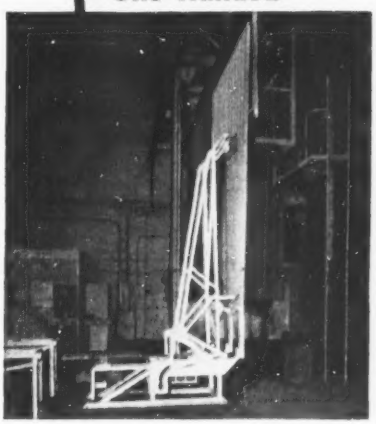
Mainly due to the spring upturn in construction and other outdoor work, employment in nonfarm industries rose about 150,000 between April and May, according to the Bureau of Labor Statistics. Furthermore, employment in manufacturing industries declined by only 40,000 between these same months. This is in contrast to an average decline of 90,000 over the same period for manufacturing industries in the years 1947-1952. A moderate decline in the number of locally unfilled job openings was reported in the middle of June by the Secretary of Labor.

Trends Fore and Aft . . .

Shipments of automatic gas water heaters for May show a drop from the previous month but an increase of 28.8 per cent over May, 1952 . . Domestic gas range shipments dropped from April to May, although shipments for May were 17.8 per cent greater than a year earlier.



You Don't Toss These 500 Pound Doors Around One-Handed



Ingenious Fully Automatic Material Handling System Moves Bulky Steel Doors Safely and Efficiently Through a Production Cycle.

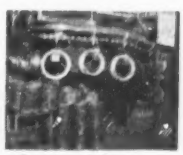
Each door, held in a frame by magnets, is raised from a horizontal to a vertical position then set on to an overhead conveyor and released to travel through various production processes. Finally it is removed from the conveyor and returned to the original, horizontal position—a finished product.

Every phase of the handling cycle is automatic and synchronized with every other movement.

The Door Handling Installation may not fit your material handling problems but whatever their nature the Allied Engineering Staff can provide solutions; consult us.

Allied Manufacturers Various Types of Conveyors

Floor Conveyor



Overhead Conveyor

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Ohio Rolls

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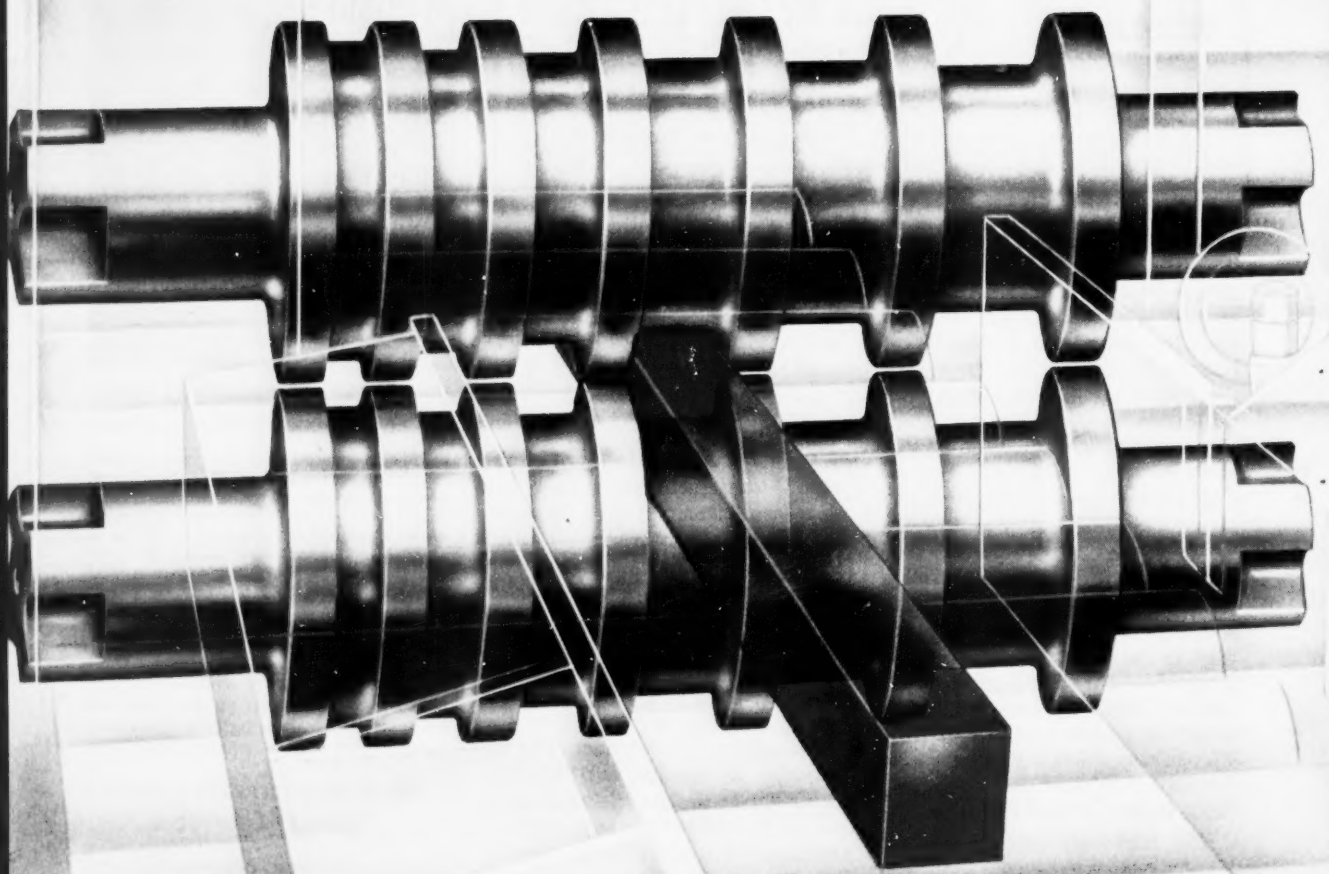
- Carbon Steel Rolls
- Ohioloy Rolls
- Ohioloy "K" Rolls
- Holl-O-Cast Rolls
- Chilled Iron Rolls
- Denso Iron Rolls
- Nickel Grain Rolls
- Special Iron Rolls
- Nioloy Rolls
- Flintuff Rolls
- Ohio Double-Pour Rolls



THE OHIO STEEL FOUNDRY CO.

LIMA, OHIO • PLANTS AT LIMA AND SPRINGFIELD, OHIO

Men of Industry

Arthur Robertson joined **Longren Aircraft Co.**, Torrance, Calif., as general manager. He was formerly plant manager, Joshua Hendy Corp., and before that assistant to the president, American Pipe & Steel Corp.

G. W. Snyder was appointed assistant superintendent of the cold strip and sheet departments of Midland, Pa., Works of **Crucible Steel Co. of America. Herman Meek** succeeds Mr. Snyder as head of the combustion engineering department at the Midland Works.

Milwaukee Stamping Co., Milwaukee, appointed **Walter H. Priess** general sales manager.

G. R. Betts was appointed sales manager, O'Neall Division, **Armco Drainage & Metal Products Inc.**, Middletown, O. Formerly manager of railroad sales, he is succeeded by **Herbert Clark Jr.**

National Tube Division, U. S. Steel Corp., appointed **Paul F. Mumma** general superintendent of its Gary, Ind., Works and **Harry W. Hudson** as general superintendent of its Ellwood City, Pa., Works. Mr. Mumma succeeds **W. A. Jayme**, assigned other duties. Mr. Hudson, formerly assistant general superintendent at Ellwood City, replaces Mr. Mumma there.

WILLIAM J. KEARNEY

CARL L. ZAK

. . . changes at Korhumel Steel & Aluminum

Korhumel Steel & Aluminum Co., Evanston, Ill., appointed **William J. Kearney** vice president in charge of sales and **Carl L. Zak** sales manager. Mr. Kearney formerly was assistant to the secretary of the company and Mr. Zak was recently with Steel Sales Corp. and before that with Pittsburgh Steel Co.

J. Emmet Judge was appointed assistant general purchasing agent, **Lincoln-Mercury Division**, Ford Motor Co., Detroit. Other appointments include **S. A. Cornell** as manager, purchase analysis department and **F. S. Strong** as senior buyer, service and accessories section.

Changes in executive positions of **New York Air Brake Co., New York**, include **Lowell R. Burch**, resigned as chairman of the board, but continuing as chairman of the executive committee and as a director; **Lewis K. Sillcox**, at present vice chairman of the board, elected honorary vice chairman and in addition continuing as a director; **Charles T. Zaoral**, vice president-operations and a director, elected a member of the executive committee.

Delta Power Tool Division, Rockwell Mfg. Co., appointed four regional managers: **Byron Coon** of Oakland, Calif., western division; **Walter H. Redpath** of Toronto, Ont., Canadian division; **George H. Madeska** of Chicago, central division; and **George E. Rockwell** of New York, eastern division.

William D. Taylor advances to manager of fabrication, By-Products Division, **Lukens Steel Co.**, Coatesville, Pa., to succeed **Raymond M. Dennis** who retires June 30 after 28 years' service. **R. Russell Fayles**, superintendent of refractories and fuel department, retains that position in addition to assignment as staff assistant to Mr. Taylor. **Har-**

PAUL F. MUMMA

HARRY W. HUDSON

. . . National Tube appointments

ry A. Fohl, manager, maintenance and construction division, turns over active direction of the division to **Reuben G. Uhler,** present superintendent, mechanical department. Mr. Fohl, who relinquishes his division managership at his own request, will serve as division adviser until he retires in June, 1954.

C. L. Lawrence was made district sales supervisor, **Permold Co.,** in charge of Michigan, Indiana, Illinois, Wisconsin and Iowa.

J. Warner Livingston was made assistant general manager, Stratos Division, Bay Shore, L. I., N. Y., **Fairchild Engine & Airplane Corp.**

Andrew G. Spiegelhalter has retired as president of **Pusey & Jones Corp.,** Wilmington, Del.

W. A. Campbell was elected vice president, **Canadian Westinghouse Co. Ltd.,** Hamilton, Ont. He retains the position of general counsel.

Solar Steel Corp. appointed **H. M. Rittger** general sales manager of tool steel products with headquarters at its Cincinnati plant, where he also will supervise sales of bar and tube steel products. **Louis B. Weiskopf** was made Chicago district sales manager.

John T. Walmsley was promoted to Chicago and Midwest area as a salesman for **Hooker Electrochemical Co.** with headquarters in Chicago.

Russell P. Folland was named vice president and general manager, **Monarch Products Co.,** Hazel Park, Mich.

William Byford was named director of purchases, **Englander Co. Inc.,** Chicago.

Karl R. Van Tassel was appointed general manager of the **Knolls Atomic Power Laboratory,** operated by General Electric Co., Schenectady, N. Y., for the Atomic Energy Commission.

Sharon Steel Corp., Sharon, Pa., appointed **Wilbur T. Blair** vice president-treasurer, effective July 15.

Harrington & King Perforating Co., Chicago, announces retirement of **H. L. Jorgensen,** works manager and secretary. He will continue to serve as a die, tool and machine design consultant.

W. E. BIKLE
. . . gen. mgr., Standard Railway

W. E. Bikle was made general manager, **Standard Railway Equipment Mfg. Co.,** Chicago. He has been assistant vice president in the Chicago office and has been associated with Standard Railway and predecessor companies since 1921.

D. E. Inman was appointed engineering manager of general industrial products of **Westinghouse Electric Corp.,** Pittsburgh.

Eastern Brass & Copper Co., New York, promoted **Carl Solby** from foreman to works manager and advanced **Jack Johnson** to assistant works manager, **George Solby** to works supervisor of the rolling department, and **Robert Kennedy** to works supervisor, shipping and receiving. **Joseph Lehocky** becomes works supervisor, slitting department.

Harry T. Marks was made administrative vice president, **Ferro Corp.,** Cleveland. He moves to the new post from the position of vice president in charge of foreign operations.

Kaiser Steel Corp., Fontana Works, Fontana, Calif., appointed **Edward A. Parker** assistant superintendent of plate and hot strip mills; **Barney Dogan** works manager; and **James P. Williams** assistant general superintendent in charge of plant engineering, metallurgical, quality control, traffic, industrial engineering and production planning.

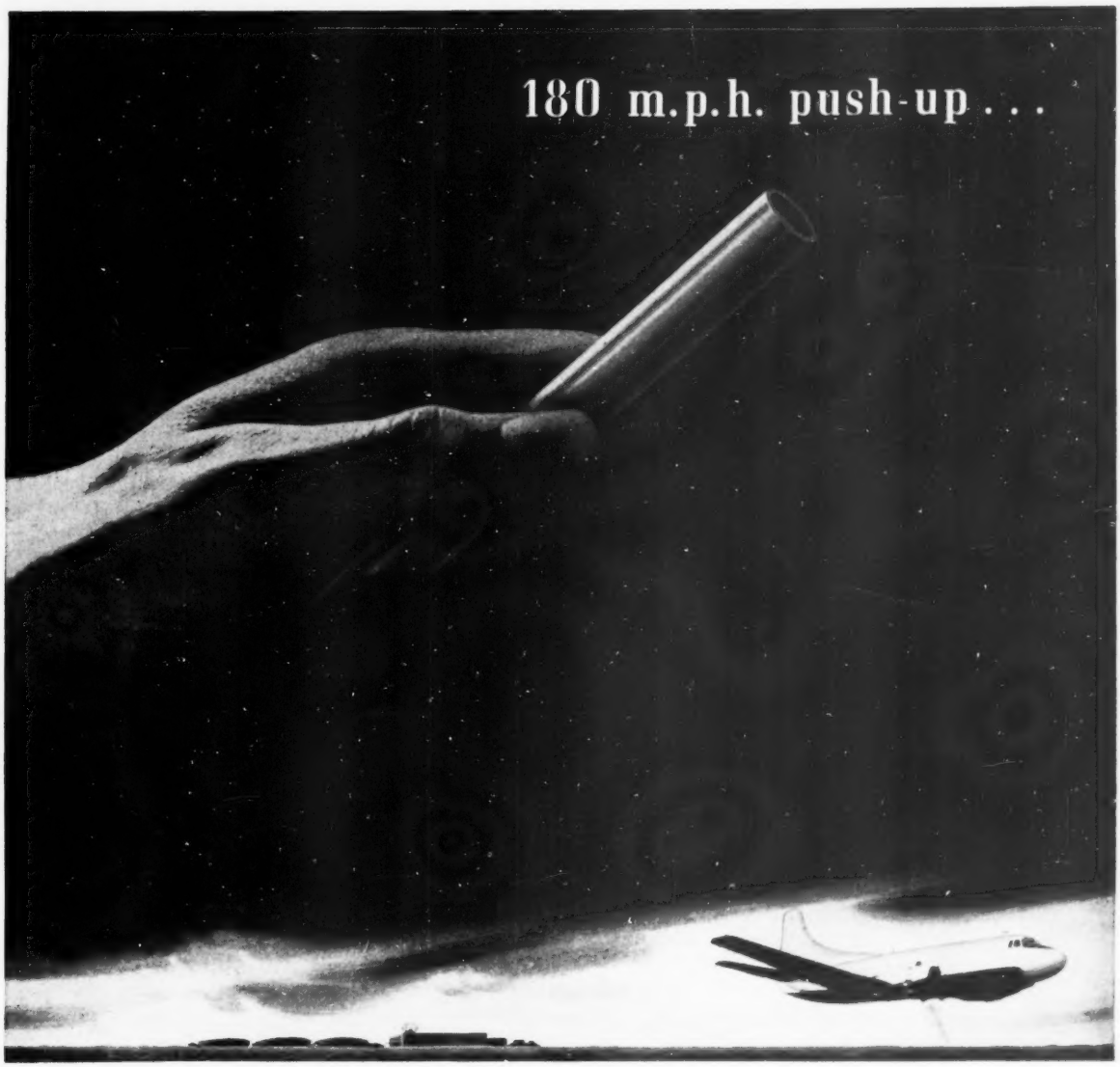
KENNETH C. SPOONER
. . . v. p., Simmons Machine Tool

Kenneth C. Spooner, sales manager, was named vice president, **Simmons Machine Tool Corp.,** Albany, N. Y., rebuilder of machine tools and manufacturer of special purpose machinery.

At **Solar Aircraft Co.'s** Des Moines, Iowa, plants, **Edward H. Gunton** was named to the newly created post of assistant manager-operations. He is replaced as production engineering division manager by **William Dixon. Marvin L. Nelson** was made head of a newly organized quality control division. He previously was manager of the engineering division.

C. Russell Todd was made general manager and director, **United Shoe Machinery Corp.,** Beverly, Mass., succeeding **Joseph F. Wogan,** general manager since 1941, who continues as vice president. **William E. Kearney** succeeds Mr. Todd as vice president and general manager of the Canadian subsidiary.

American Wheelabrator & Equipment Corp., Mishawaka, Ind., announces the following promotions: In its home office **Robert L. Orth** was made field sales manager, **Julius E. Skene** manager of customer service and **Philip R. Jordan** chief sales engineer. **Gordon R. Bryant** was made Detroit district manager in which office **John W. Swantz** becomes district sales engineer and **Erwin C. Shepard** a service engineer. **F. H. Toman** replaces Mr. Swantz as district sales engineer in the Chicago office and



Any time you fly in a Martin 4-0-4, Superior tubing is probably working for your safety.

Once you're airborne, watch the 840-pound main landing gear assemblies flip forward and up with amazing speed, even though they may be working against a 180 m.p.h. drag. Fast landing gear retraction gives you an extra margin of take-off safety because "clean" aircraft have better flight characteristics.

Chances are your Martin 4-0-4 contains many feet of Superior ½" stainless steel tubing. In the hydraulic system, this tubing operates at a pressure of 3000 p.s.i., normally. On Martin's torture racks, it has demonstrated remarkable endurance under violent pressure surges at 1000 cycles *per second*, even around minimum bends.

Performance like this may well have a bearing on your production problems as well as on your personal safety. Superior's long experience in fine tubing, backed by highly-developed production equipment and extensive research and testing facilities assures you of top-quality small tubing for doing tough jobs well. Outline your own production problems in a letter to us, right now—we'll send you complete information and the appropriate Data Memo by return mail. Address: Superior Tube Company, 2005 Germantown Ave., Norristown, Pennsylvania.

Round and Shaped Tubing available in Carbon, Alloy, and Stainless Steels, Nickel Alloys and Beryllium Copper.

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All analyses .010" to ⅝" O.D.
Certain analyses (.035" Max. wall) up to 1⅜" O.D.

R. H. FELLOWS
. . . moves to Wood Shovel

A. E. WILLIAMS
. . . eng. v. p. of Fruehauf Trailer

J. ROY GORDON
. . . v. p. of Inco's Canadian operations

is replaced in the Toronto, Ont., office by **J. Douglas Lamb** as district service engineer. **Wilfred G. Carrie** was made Seattle district manager and **G. C. Tolton**, district manager, Greensboro, N. C., branch.

Wood Shovel & Tool Co., Piqua, O., appointed **R. H. Fellows** manager of sales and engineering of its new Kilbourne & Jacobs Division which will make industrial and garden wheelbarrows, mortar pans and mortar boxes. Mr. Fellows was manager of sales and engineering and an officer of Kilbourne & Jacobs Mfg. Co. from which Wood purchased the wheelbarrow operation.

Carl H. Zieme has retired from **Republic Rubber Division**, Lee Rubber & Tire Corp., Youngstown, after 42 years' service. Since 1932 he held the position of service engineer.

A. E. Williams was elected vice president in charge of engineering of **Fruehauf Trailer Co.**, Detroit.

Added to the technical staff of **Designers for Industry Inc.**, Cleveland, are **Charles E. Freese** as project engineer, mechanical development division; and **Vern L. Ripley Jr.** as senior project designer, same division.

Ben A. Schwirtz was made Cleveland sales manager, **Trane Co.** He was with the Des Moines, Iowa, sales office for seven years.

J. Roy Gordon was elected vice president and general manager of Canadian operations of **International Nickel Co. of Canada Ltd.**, Copper Cliff, Ont., succeeding the late **R. Leslie Beattie.** Mr. Gordon has been an assistant vice president since 1947 and in addition was appointed, in 1952, assistant general manager, Canadian operations, under Mr. Beattie.

Archie C. Greer was made purchasing agent, **Pittsburgh Steamship Division**, U. S. Steel Corp., Cleveland, to succeed **William N. Brown**, resigned.

General Electric Co. established a direct-current motor and generator department and appointed **Oscar L. Dunn** general manager of the new department located in Erie, Pa. Others appointed to the new organization are **Paul D. Ross**, manager of marketing; **Richard M. Hartigan**, manager of employee relations; **Paul S. Stough**, manager of engineering; **Louis E. Wengert**, manager of finance; and **Francis J. Boucher**, manager of manufacturing.

Charles E. Howes was appointed general manager of sales for the Berger Mfg. Division, Canton, O., of **Republic Steel Corp.** He succeeds **R. W. Helms**, who was transferred to Cleveland as assistant general manager of sales for the entire Republic organization. Succeeding Mr. Howes as manager of sales, steel equipment division, is **D. E. George**, former manager of Berger's New York sales branch. Mr. Helms' name was incorrectly spelled in the June 22 STEEL. **Arthur R. Jones** was appointed Chicago district sales manager of **Republic Steel Corp.** to succeed **S. A. Crabtree**, recently named an assistant general manager of sales at Cleveland.

Promotions in the sales department of U. S. Steel Corp.'s **Tennessee Coal & Iron Division** include appointment of **Roy C. Rhodes** as manager of sales at Houston. He succeeds **Frederic C. Buck**, retired. Transferred to Mr. Rhodes' former position as sales manager in Memphis, Tenn., is **Thomas W. Benton Jr.** **Walter V. Jones** is sales manager at New Orleans.

Carl. L. Erwin, personnel manager of **Edward Valves Inc.**, subsidiary of Rockwell Mfg. Co., East Chicago, Ind., was advanced to assistant works manager.

Aaron F. Bowser was made a district sales manager, Radio & Television Division, **Sylvania Electric Products Inc.**, with headquarters in Buffalo.

Joseph A. Conlon was appointed vice president, **New York Belting & Packing Co.**, Passaic, N. J. He succeeds **Ben F. Reuther**, retired.

Edward LeMaire was made sales engineer for the drill steel division, **Crucible Steel Co. of America**, Pittsburgh. He is assigned to territory of the eastern United States.

M. L. Hiller, a field engineer in

for springs that keep their spring

WICKWIRE GAMMA SPRING WIRE

Upholstery springs made from Wickwire Gamma Spring Wire can be counted on for long-lasting retention of resiliency.

Wickwire Gamma Spring Wire is always uniform in quality and tensile strength because it is a product of fully integrated facilities... which means complete control of materials, manufacture and testing from ore to finished wire.

Whatever your needs in specialty steel wires... high or low carbon steel... round or shaped... in all tempers, grades and finishes — For the Wire You Require, Check With Wickwire.

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THE CALIFORNIA WIRE CLOTH CORPORATION—Oakland, California
WICKWIRE SPENCER STEEL DIVISION—Atlanta • Boston • Buffalo
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WICKWIRE WIRE

PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION

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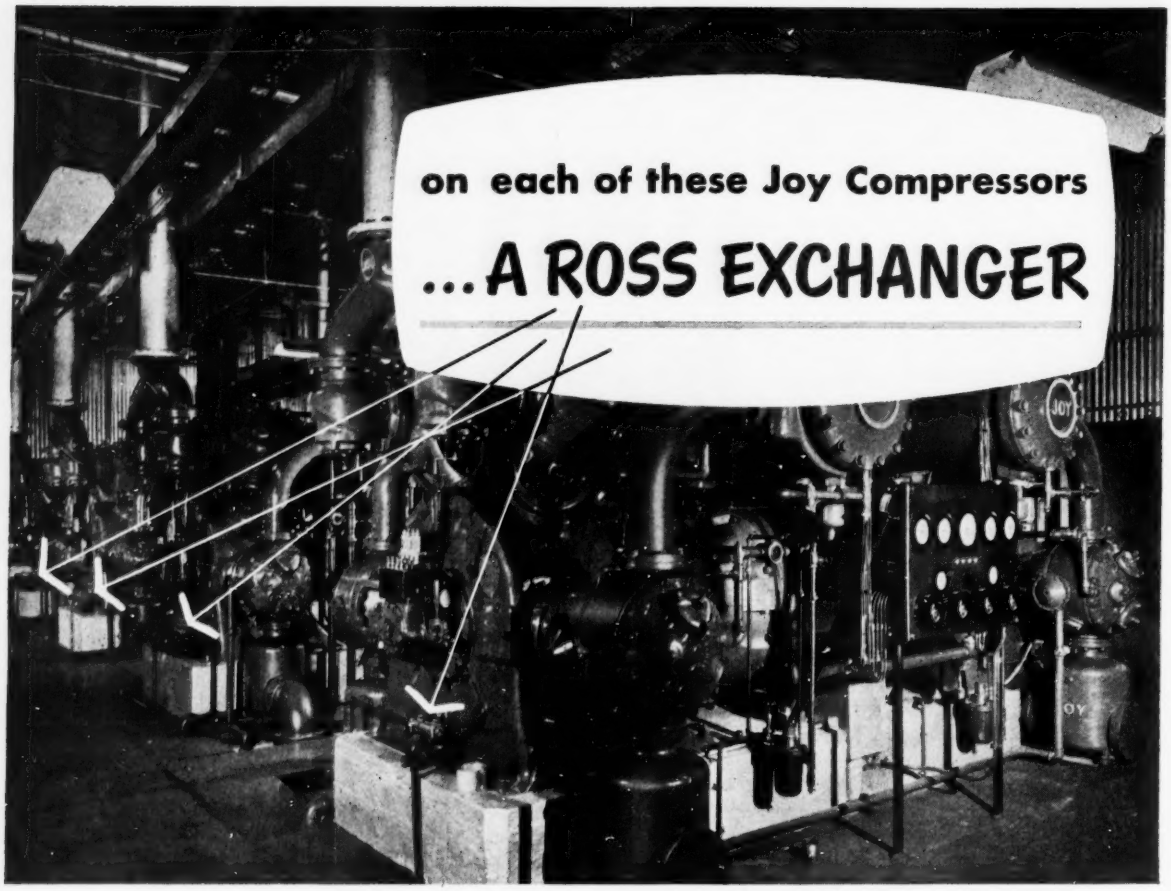

TO PROTECT running gear with dependably cooled lube oil

"Install it, start it — then forget it!"

That's what Joy Manufacturing Company has to say about its Heavy-Duty WN-114 Air Compressors. To back these claims — Joy Compressors are equipped for constant, dependable service 24 hours a day, year in and year out.

Centered in the force-feed lubrication system in each of these compressors is a compact Ross Type BCF Exchanger. Main bearings, crank pins, connecting rods, cross head pins and other close tolerance parts never go wanting for properly cooled lube oil. They depend on temperature safety — *and they get it!*

Rugged dependability has not only made Ross Exchangers standard components on most makes of compressors as lube oil coolers — but as intercoolers and aftercoolers as well. In fact, Ross Exchangers are used throughout industry to control temperatures in engines, speed increasers, turbines, torque converters and numerous types of hydraulic machinery.

Sound reasons underscoring this acceptance: They're pre-engineered, fully standardized and constructed of enduring copper and copper alloy. More information on Ross Type BCF Exchangers is in Bulletin 1.1K5. Write for your copy!

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DIVISION OF AMERICAN RADIATOR & STANDARD SANITARY CORPORATION
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Serving home and industry: AMERICAN-STANDARD • AMERICAN BLOWER • CHURCH SEATS & WALL TILE • DETROIT CONTROLS • KEWANEE BOILERS • ROSS EXCHANGERS

Washington office of **Elliott Co.**, is now district manager replacing **S. K. Hostetter Jr.**, now sales manager of the Ampere, N. J., plant.

Sylvania Electric Products Inc., New York, appointed **E. Finley Carter** vice president and technical director and **Howard L. Richardson** vice president in charge of engineering.

In the apparatus sales division, **General Electric Co.**, at Schenectady, N. Y., **O. B. Falls Jr.** was made manager of electric utility sales; **T. F. Mackey** manager of heavy industries sales; **K. R. Ross**, manager of medium industries sales; **W. V. Gough** manager of light industries sales; **H. R. Wallrath** manager of contractor and construction industries sales; and **A. H. Hemker** manager of farm, trade and services industries sales.

Changes in board membership and executive responsibilities of **Rem-Cru Titanium Inc.**, Midland, Pa., include: **C. K. Davis**, president and general manager of Remington Arms Co. Inc., formerly chairman of the board of Rem-Cru Titanium, was made honorary chairman of the board. **W. H. Colvin**, president of Crucible Steel Co. of America and former president of Rem-Cru, was elected chairman of the board. **W. U. Reisinger**, vice president and director of finance for Remington Arms, was elected president of Rem-Cru and **J. S. Hoffman** was made treasurer. Added to the board of directors are **Joel Hunter**, executive vice president, Crucible Steel Co., and **H. M. Stoessel**, treasurer, Remington Arms Co.

Raymond J. Odiorne was named manager of **American Can Co.'s** new can-making plant at Lemoyne, Pa. He has been assistant manager of the Maryland factory at Baltimore for the last two years.

FRED M. GILLIES
New president of Acme Steel Co., Chicago. Noted in STEEL, May 18 issue, p. 69

C. V. Bressoud joined **Smallcomb Electric Co.**, Los Angeles, as sales manager. He formerly was sales manager, Ilig Co.

Harry A. Hauser was appointed a Pacific Northwest sales representative for **Carpenter Steel Co.'s** alloy tube division. He was previously purchasing agent for Hanford Plutonium Works, of General Electric Co.

Richard C. Martin was made national sales director of **Kelite Products Inc.**, Los Angeles.

Edward A. Ulvestad was named director of purchases, **Kropp Forge Co.**, Chicago. He formerly was purchasing agent of Kropp Forge Ordnance Co., Melvindale, Mich., a subsidiary.

Dean Weikart, former tool and product engineer with **Rockwell Mfg. Co.'s** Crescent Machine Division, Leetonia, O., was promoted to chief engineer of the firm's Tupelo, Miss., plant.

C. M. Kemp Mfg. Co. appointed **John R. Longenecker** as its representative in the Pittsburgh district to succeed the late **John P. Flippen.**

L. J. Michelot was made plant manager of **Continental Can Co.'s** Clearing-Owens plant, Chicago, and **P. J. Coyne**, plant manager at Houston.

L. N. Dukelow was made special representative, alloy products, general sales department, **Jones & Laughlin Steel Corp.**, Pittsburgh.

Frank E. Foote is assistant secretary, **Mine Safety Appliances Co.**, Pittsburgh.

U. S. Steel Corp.'s housing subsidiary, **Gunnison Homes Inc.**, appointed **Thomas P. Quinn** as manager, Gulf-Southwest district, with headquarters in Dallas. He succeeds **Lee R. O'Hern**, resigned.

Bethlehem Pacific Coast Steel Corp. appointed **Julio Venturini** combustion engineer for its Los Angeles plant.

William E. Kuyper was appointed vice president by **Bohalco Inc.**, Huntington Park, Calif.

E. A. Bellande, vice president and manager, AiResearch Aviation Service Co., division of **Garrett Corp.**, Los Angeles, returns to the corporate staff as vice president and assistant to the president. For the last several years he has been assigned to AiResearch Aviation Service to effect a reorganization of that division's operations.

T. R. Penisten was appointed sales representative of **Goodyear Tire & Rubber Co.'s** metal products division, Akron.

OBITUARIES...

James J. Garrett, general superintendent of foundry operations at the **Ford Motor Co.'s** Rouge plant, Detroit, died June 16.

Charles F. Duchscherer, 65, retired vice president of **R. S. McMannus Steel Construction Co. Inc.**, Buffalo, died June 16. He was with the firm more than 30 years prior to retiring in 1952.

Zern A. Gildersleeve, 65, president, **Gildersleeve Machine Co.**, Buffalo, died June 16.

Arthur Westerfield, 68, vice president, **United States Radiator Corp.**, Detroit, died June 15.

Oscar E. Schlichter, 78, founder of **Hamilton Tool Co.**, Hamilton, O., died June 10.

Sumner Simpson, 79, board chairman and former president of **Raybestos-Manhattan Inc.**, Passaic, N. J., died June 13.

John E. Powell, application engineer for **Worthington Corp**, died June 6 at Wellsville, N. Y.

James A. Struthers, 60, works manager of **Hercules Powder Co.'s** explosives plant at Bacchus, Utah, died June 12.

John R. Hurley, 45, president, **Thor Corp.**, Chicago, died June 21.

Runnymede Capacity Up

$500,000 addition to plant of Canadian fabricator will raise output 300 per cent

RUNNYMEDE Iron & Steel Ltd., Toronto,Ont., is erecting a $500,000 addition to its structual steel fabricating plant. It is expected that this project will increase the capacity by about 300 per cent.

Measuring 287 ft by 170 ft with a clear height of 22 ft, the addition will be used for the fabrication of steel for buildings, bridges, boilers and other similar items.

Overhead cranes are being installed in the yard to service the new plant and to improve the handling of the heavy materials.

Nicholson To Erect New Plant

Nicholson File Co. of Canada Ltd., subsidiary of Nicholson File Co., Providence, R. I., will erect a plant in Port Hope, Ont. The plant will replace an older one and construction will start immediately on the building, which will contain 140,000 sq ft of floor space.

National Supply To Build

National Supply Co., Pittsburgh, manufacturer and distributor of oil field machinery and equipment, has arranged to acquire an 80-acre plant site in Gainesville, Tex. National plans to erect a plant with about 100,000 sq ft of space.

Milne Adds Sales Office

A. Milne & Co., New York, tool steel distributor, added a new sales office, located in the White Henry Stuart building, Seattle. S. Robert Simonds is manager.

Equipment Makers Merge

Two North Tonawanda, N. Y., business enterprises have merged to form Harris Holmden Co., manufacturer of industrial plant equipment. They are Tedd Harris Co. and Tonawanda Welding Service. The new partnership, with an industrial plant at 27 Fredicka St., manufactures a patented quick opening and closing safety door for pressure vessels, Scotch marine boilers, filters, heat exchangers and other products.

Principals in the partnership are Tedd Harris, who founded the Tedd Harris Co. about three years ago, and David A. Holmden who organized the Tonawanda Welding Service seven years ago.

Duro-Aluminum Plans Addition

Duro-Aluminum, Hamilton, Ont., has been awarded a building permit for a $77,000 addition to its factory.

Frasse Opens New Plant

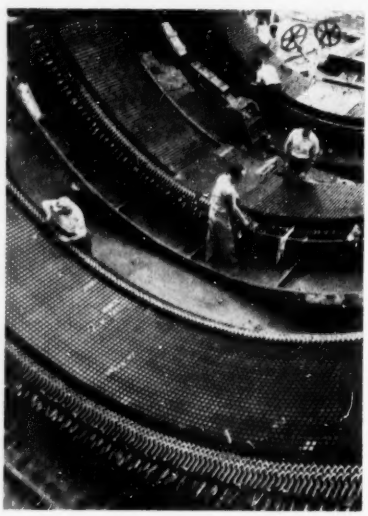
Peter A. Frasse & Co. Inc., New York, warehousing firm, opened a new plant at 1275 Sheridan Drive, Tonawanda, N. Y.

Exporting Firm Organized

William Neal & Co. Inc., New York, has been organized to export steel and electrical products. William P. Neal, president, was formerly associated with the Pittsburgh and New York offices of Jones & Laughlin Steel Corp., and the New York offices of Mercantile Metal & Ore Corp., and Kaunitz & O'Brien Inc.

Adamas Appoints Agent

Adamas Carbide Corp., Harrison, N. J., manufacturer of standard carbide tools, tool tips, dies and wear parts, appointed Specifax Corp., Pasadena, Calif., as its sales representative in that state.



Water Power Sliced

These three "watermelon" slices actually are sections of the outer frame of a waterwheel generator being built by Westinghouse Electric Corp., East Pittsburgh, Pa. Each slice weighs 43 tons; total stator, 129 tons. Of this weight, more than 12 tons are copper

Enters Haulaway Trailer Field

Fruehauf Trailer Co., Detroit, reentered the haulaway trailer field and appointed Mel W. Moss as sales manager of its new Haulaway Trailer Division. The trailers, which will round out the company's product line, will be manufactured at the firm's Ft. Wayne, Ind., factory.

Griffin Coil Spring Expands

Griffin Coil Spring Co. Inc. is constructing additional facilities at 196 E. Jefferson Blvd., Los Angeles, for manufacture of industrial coil springs, flat springs, stampings and wire forms. E. C. Rhodes is president.

Taylor-Forbes Changes Hands

The 51-year-old Taylor-Forbes Co., Guelph, Ont., has been bought by Ernest Ridout and T. M. Moran. A new company, Taylor-Forbes (1953) Ltd., has been formed to continue present operations. Chairman of the board of the new company is Ernest Ridout, founder of Ernest Ridout Real Estate Ltd. T. M. Moran, president, was formerly vice president of the B. C. Electric Railway Co. G. P. Waters, who has been with Taylor-Forbes since 1905, is appointed executive vice president.

ASTM Officers for 1953-54

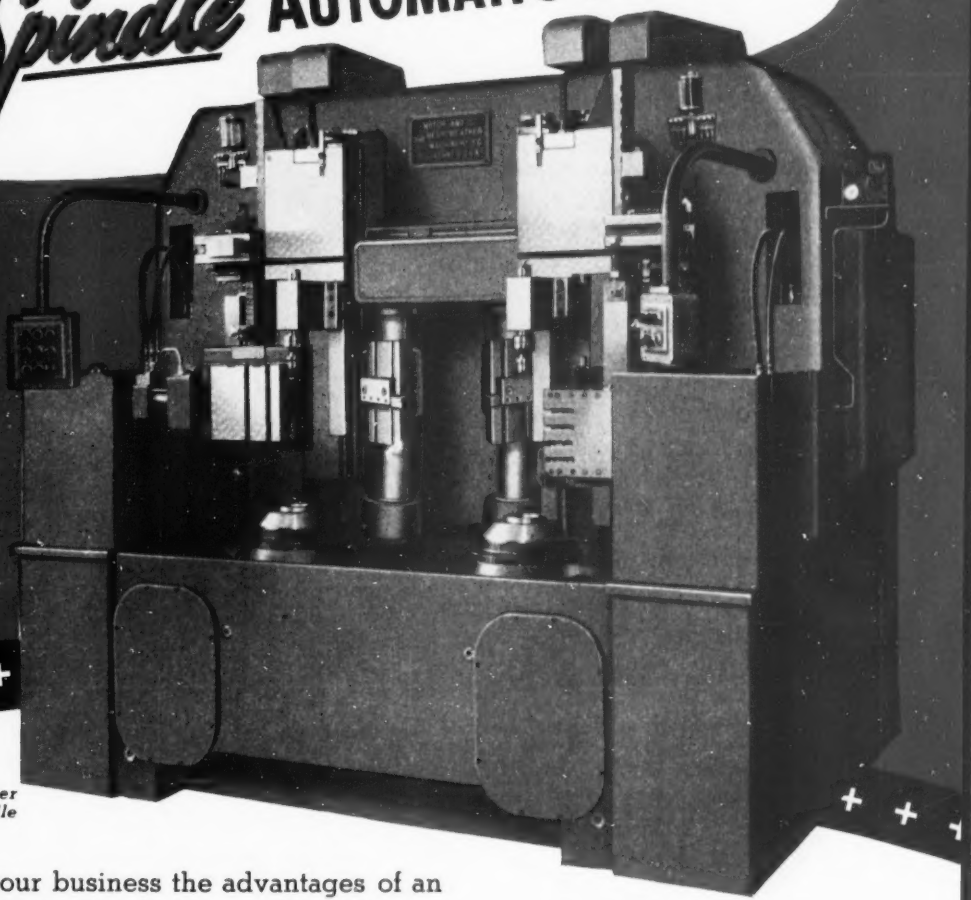
Officers of American Society for Testing Materials, Philadelphia, for the ensuing year will be: President, Leslie C. Beard Jr., assistant director of laboratories, Socony-Vacuum Oil Co. Inc., New York; vice president, Claire H. Fellows, director of engineering laboratory and research department, Detroit Edison Co., Detroit. The new directors are: Neil A. Fowler, director of sales and research, General Box Co., Des Plaines, Ill.; Richard T. Kropf, vice president, Industrial Thread Division, Belding Heminway Corticelli, New York; Theodore E. Olt, director of research laboratories, Armco Steel Corp., Middletown, O.; John R. Townsend, director of material and

Obtain *PLUS* Values from the MOTCH & MERRYWEATHER *Twin-Spindle* AUTOMATIC LATHE . . .

GET PLUS PRODUCTION!

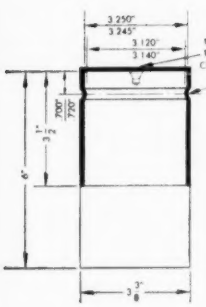
GET PLUS ACCURACY!

GET PLUS PROFITS!



Motch & Merryweather VTBF-12 Twin Spindle Automatic Lathe.

Command for your business the advantages of an automatic turning-boring-facing cycle with precision – *plus* the value of *twin yet independent* spindles – *plus* the value of vertical facility for handling parts. These machines are accurate, rugged, and dependable, yet simple to set up.

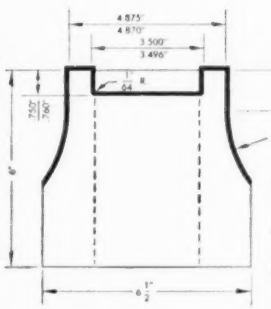


Case Study No. 96

Operation – Turn, face, groove and center drill.

Material – SAE 1335 annealed.

Production – 124 pieces per hour.



Case Study No. 124

Operation – Turn, face and bore.

Material – Gray iron casting.

Production – 60 pieces per hour.

STANDARD SPECIFICATIONS

Chuck diameter	10"
Swing	12" dia.
Work height: chucking	12"
between centers	16"
Turning slide, vertical feed	14"
Boring slide, vertical feed	14"
Facing slide, horizontal swing	6"

★ ★ ★

Individual, selective hydraulic feed for each slide. . . . Special variations to meet individual requirements. . . . Simple contours by cam-operated tools. . . . Tracer control can be added.

Manufactured by — THE MOTCH & MERRYWEATHER MACHINERY CO. —

CLEVELAND 13, OHIO

Builders of Circular Sawing Equipment, Production Milling, Turning and Special Machines

PRODUCTION-WITH-ACCURACY MACHINES AND EQUIPMENT

standards engineering, Sandia Corp. Sandia Base, Albuquerque, N. Mex.; Prof. Kenneth B. Woods, Purdue University, Lafayette, Ind.

Plans Steel Fabricating Plant

Disher Steel Construction Co. Ltd., Toronto, Ont., is preparing tentative plans to erect a structural steel fabricating plant and office building. Some preliminary work on this project may begin before the end of the year. The Canadian National Railways will serve the plant from its main line which forms the north boundary of the property. This company fabricates structural steel for bridges and all types of buildings.

Transportometer Agents Named

Transportometer Division, Sintering Machinery Corp., Netcong, N. J., manufacturer of continuous weighing equipment, appointed as sales representatives: Tate & Roe Co., Dallas; Supply Division, Lake Shore Engineering Co., Iron Mountain, Mich.; Galigher Co., Salt Lake City, Utah.

Machinery Firm Adds Division

Lake Erie Engineering Corp., Buffalo, designer and manufacturer of hydraulic presses and special machinery, established a Rolling Mill & Special Products Division. The division, under the direction of J. P. Finkbone, offers a broad line of auxiliary rolling mill equipment for ferrous and nonferrous metals. L. L. Freret serves as chief engineer of the division.

McLaughlin Heads Association

Blast Furnace & Coke Association of the Chicago district elected L. P. McLaughlin as president to succeed C. P. Johnson. Mr. McLaughlin is superintendent of the coke department, Wisconsin Steel Works, International Harvester Co. Mr. Johnson is general superintendent of the Federal Furnace plant, Interlake Iron Corp. Other officers are: Vice president, William Millar, division superintendent of blast furnaces for United States Steel Corp. in South Chicago, Ill.; secretary-treasurer, G. A. Fort, assistant division superintendent of coke ovens for United States Steel Corp. in Gary, Ind.

Hofmann Designs Tube Trailer

A. Jay Hofmann Co., Narberth, Pa., has developed the first double tube pole trailer. It weighs 3 tons, has a capacity of 35,000 lb and measures 24 ft between axles and tow pins. It will carry pipe, bars, piling and other long products up to lengths of 72 ft.

Need a Blizzard?

A CHILL wind that blows good is in the making at Lockheed Aircraft Corp.'s weather works.

This Burbank, Calif., firm is constructing a blizzard tunnel to be used by research engineers to improve methods of eliminating ice from airplanes. The $130,000 wind tunnel will be completed and fully operating in August.

The 9600 cu ft icing tunnel will be chilled by the equivalent of 776 home refrigerators — what scientists describe as a 1,165,000 Btu-hr refrigeration system. Misty spray and a mechanically created wind of hurricane force will be added to duplicate flying conditions in ice-forming weather.

Advantages of the installation will be faster research and reduced testing costs, says C. L. Johnson, chief engineer.

Ventures Ltd. Plans Refinery

Plans to bring ore from all over the world for refining in northern British Columbia and southern Yukon were outlined at the annual meeting of Ventures Ltd., a holding and development company in Toronto, Ont. Plans call for completion of the first stage of a multimillion dollar power development in 1955. Eventually 4.3 million hp would be produced to feed the electric furnaces of the smelting plant.

Thayer Lindsley, president, said the site combines water storage at an elevation of more than 2000 ft close to tide water that is free of ice throughout the year.

Hutchinson To Build Plant

W. S. Hutchinson & Sons, Chicago, will construct a metal decorating plant near Tarrant City, Ala., a suburb of Birmingham. The plant will be operated by Hutchinson Metal Decorating Co., a subsidiary, and will be managed by Charles H. Stant Jr., vice president and general manager of the subsidiary.

Purchases Turnbull Elevator Co.

Combined Enterprises Ltd., Toronto, Ont., purchased Turnbull Elevator Co. Ltd. M. O. Simpson, president of Combined Enterprises, was elected chairman of the Turnbull board, while W. G. Turnbull will continue as president.

Automotive Trim Expanding

A $300,000 addition to the $1 million Canadian Automotive Trim Ltd., plant in Ajax, Ont., now nearing completion, will be built. The addition will enlarge the present 82,500 sq ft of floor space to almost 120,000.

Quaker Establishes Warehouse

Quaker Rubber Corp., division of H. K. Porter Co. Inc., Pittsburgh, established a stock-carrying branch warehouse and sales office at 2840 N. Claiborne St., New Orleans. Morgan Kather is in charge of the warehouse.

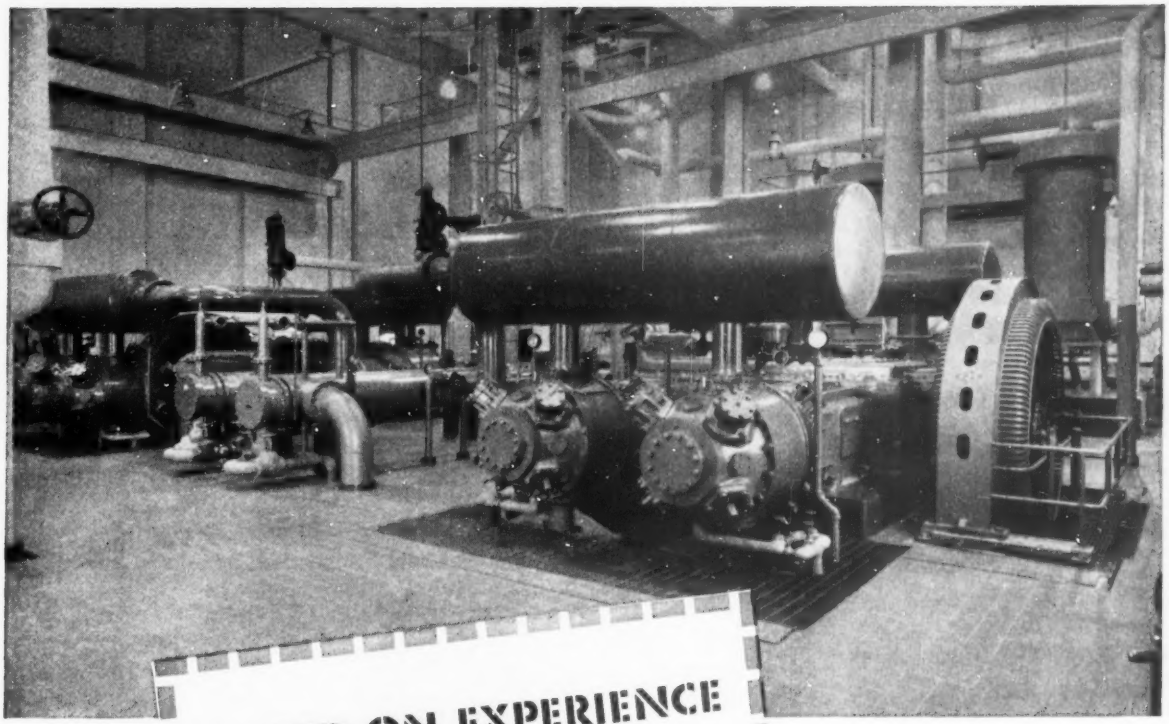
Foster Opens Western Office

L. B. Foster Co., Pittsburgh, supplier of pipe, sheet steel piling and trackage, established an office at 3460 Wilshire Blvd., Los Angeles. H. E. Fleishman, vice president, is in charge of the office.

Clark Awards Franchise

Clark Equipment Co., Industrial Truck Division, Battle Creek, Mich., awarded a Northern California sales franchise to Glen L. Codman Corp. Codman will handle the

(*Please Turn to Page* 81)



BASED ON EXPERIENCE

modernization program at major auto plant calls for additional Clark Air Compressors

With the recent completion of another phase in the modernization program of a major auto plant, two more Clark balanced/Opposed Compressors were placed in service to supply plant air for the shops and the foundry.

Plans called for installation on the second floor of a powerhouse. This demanded vibration-free operation. Having had several years' experience with two Clark 1500 hp, CBA-4 Balanced/Opposed Compressors, plant engineers repeated their original selection — *two more Clark units*. They had already *demonstrated* their vibration-free performance and extremely low maintenance — the direct results of Clark Balanced/Opposed design and precision construction.

For today's expansion and modernization programs, there is a growing preference for Clark Balanced/Opposed, Motor-Driven Air Compressors — industries' *most modern* compressors. Your nearest Clark representative will furnish complete information, or write for Bulletin 118.

CLARK BROS. CO. • OLEAN, N. Y.
Division of Dresser Operations, Inc.
Sales Offices in Principal Cities Throughout the World

PRECISION BY THE TON

CLARK balanced/opposed compressors

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The Skill of Craftsmanship

No longer are horseshoes hammered out by hand, or steel and wire made by crude methods; but even with the most modern machinery and scientific checks, Washburn wire still is made with that touch of craftsmanship which comes from long experience.

Special lots for unusual requirements are second nature at Washburn.

EAGLE Music Spring Wire

Round Untempered Low and High Carbon Spring Wires

Flat Cold Rolled Strip 6" and Narrower, Bright, Galvanized, Tinned and Cadmium Finish

Flat Tempered and Untempered Wires in .50 to 1.25 Carbon Range

WASHBURN WIRE COMPANY, NEW YORK CITY

WASHBURN

CLEAN, UNIFORM BILLETS - STRIP - RECTANGULAR, ROUND, FLAT RODS
TEMPERED AND UNTEMPERED FLAT AND ROUND HIGH CARBON WIRES

(*Continued from Page 78*)

Ross carrier and Ross lift-truck line of materials handling equipment recently acquired by Clark.

Electro Arc Sales Co. Formed

Electro Arc Sales Co. was organized in Ann Arbor, Mich., to handle distribution and service of Electro Arc disintegrators. The company includes former sales representatives of Electro Arc Mfg. Co., Detroit, and has 20 engineering sales offices throughout the United States.

Cooper-Bessemer Opens Branch

Cooper-Bessemer of Canada Ltd., subsidiary of Cooper-Bessemer Corp., Mt. Vernon, O., opened its branch office and parts warehouse in Edmonton, Alta., under the direction of Edward D. Van Fossen. The parent company makes engines, gas boosters, compressors, castings, etc.

Jansky & Bailey Changes Name

Jansky & Bailey, radio consultants and electronic engineers, have changed their form of business organization from a partnership to a corporation. It is known as Jansky & Bailey Inc. C. M. Jansky Jr. is chairman of the board; Stuart L. Bailey, president; and Harold D. Kube, secretary. Executive and engineering offices are in Washington.

Allied Research Names Agents

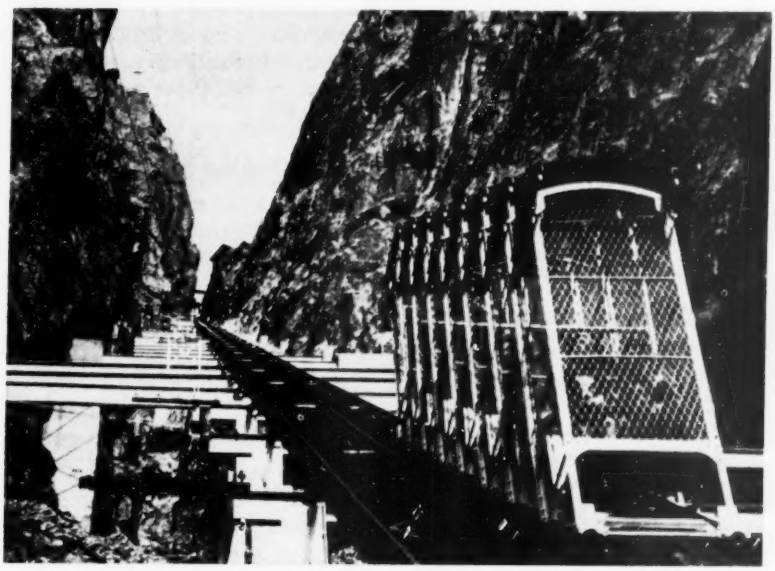
Allied Research Products Inc., Baltimore, manufacturer of plating compounds and chemicals, appointed as field representatives for its Allied Research Sales Corp.: W. O. Osborne, 1501 Euclid Ave., Cleveland; Earl H. Messmore, 200 Standard Bldg., Ft. Wayne, Ind.

Metromatic Building Plant

Metromatic Mfg. Co., oil burner manufacturer, is building an additional plant unit at Everett, Mass., costing $250,000, reports the New England Council. This is plant No. 4 for the company.

Carpenter Marks Expansion

Carpenter Steel Co., Reading, Pa., formally opened its new mill-branch warehouse and office at 1530 Industrial Way, Belmont, Calif. D. J. O'Neil, Pacific Coast manager, is in charge of the warehouse and office.



A Good Bet: The Cables Will Hold

First complete overhaul of the funicular railway at Royal Gorge, near Canon City, Colo., since it was put into operation 23 years ago has been completed. New cables, longer than those used to operate the elevators in the Empire State building, New York, were furnished by Colorado Fuel & Iron Corp., Denver, and were installed by engineers of Otis Elevator Co., New York. The railway, as shown above, descends one-third mile to the bottom of the canyon at a 45-degree grade

Enters Extrusion Field

North American Exrusions Corp. will sell entire production to other manufacturers

NORTH AMERICAN Extrusions Corp., Kalamazoo, Mich., a newcomer to the aluminum extrusion field has started production in its recently completed plant, says R. H. Stiles, president. The plant has 25,000 sq ft of manufacturing space.

"While most of the present extruders also fabricate one or more finished products, North American's entire production facilities will be devoted exclusively to producing aluminum extrusions for other manufacturers," Mr. Stiles explains. "By concentrating our entire efforts on the production of aluminum extrusions, especially those requiring the use of 3-S and 63-S alloys, we are confident that we can provide extrusion users with a constantly dependable and economical source of supply."

D. O. Stiles is general manager of the corporation while Gerald Settles is chief engineer.

Sandvik Steel Opens Office

Sandvik Steel Inc., New York, opened an office at 3609 E. Olympic Blvd., Los Angeles 23. E. G. Sammann is the district manager. The firm's works are located in Hellefors and Sandviken, Sweden.

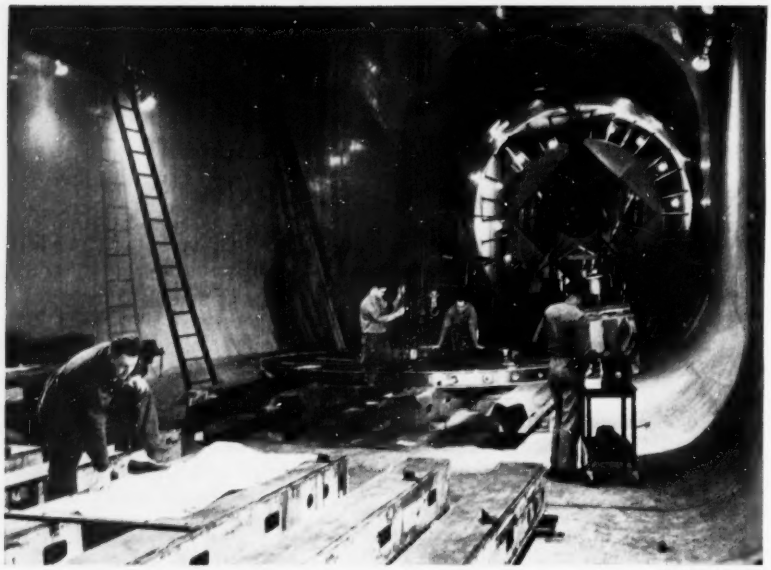
Hydreco Appoints Distributors

Hydreco Division, New York Air Brake Co., New York, appointed 24 hydraulic equipment distributors in the United States and one in Canada. These distributors will sell pumps, motors and valves for industrial applications in the plant and to small original equipment manufacturers.

Hydreco's manufacturing plant and offices are in Cleveland.

Pfaudler Expands Ohio Plant

Pfaudler Co., Rochester, N. Y., announced a $150,000 modernization and expansion program for its Elyria, O., plant. Plans include expanding operating facilities, extending the office building, and constructing a new furnace. The firm recently erected a $100,000 addition to its research building



Authenticated

Transonic Problems To Get Airing

Plane models are deposited safely beyond the sonic "barrier" in a wind tunnel housed in Boeing Airplane Co.'s laboratory in Seattle, Wash. Research here is expected to solve many problems in the transonic zone—speeds at which the air flow pattern is changing from subsonic to supersonic rules. Air stream is driven by two stage 72-blade fan. The 3-foot blades are mounted on large precision-built wheels, one of which is shown above before being put into place

in Rochester. The company makes glass-lined and alloy steel tanks, mixers, kettles, evaporators, stills, cookers, filling machinery, process equipment, heat exchangers, etc.

National Enlarges Facilities

National Automotive Fibres Inc., Detroit, will construct an addition to its almost completed manufacturing plant at Ajax, near Toronto, Ont. The plant being built for the company's subsidiary, Canadian Automotive Trim Ltd., will supply automotive trim to plants in the Toronto area.

Alpha Appoints Representative

Alpha Tool & Supply Co., Closter, N. J., importer and distributor of British-made precision tools, appointed Exacto Industries Inc. to be its representative west of the Mississippi river.

Machinery Firm Buys Rite-Way

Package Machinery Co, East Longmeadow, Mass., purchased Rite-Way Products Co., Chicago, manufacturer of dairy industry machines. Rite-Way's manufacturing facilities will be moved from Chicago to East Longmeadow. Company officials expect a 10 per cent increase in sales.

Ferrotherm Forms New Division

Ferrotherm Co., Cleveland, formed an Aircraft Components Division, to furnish to the makers of aircraft gas turbines component assemblies constructed by the use of precision high temperature brazing. Roger A. Long is manager and chief engineer. He is assisted by Robert Ruppender, development engineer.

Metal Window Corp. Builds

Metal Window Corp., Inglewood, Calif., manufacturer of aluminum casement windows and aluminum sliding windows, is constructing a plant at 501 South Ave., that city. Leavitt B. Blaze is president.

Machinery Firm Opens Office

Electric Controller & Mfg. Co., Cleveland, opened a district office at 1133 S. Brentwood Blvd., St. Louis. A. M. McIntyre is district manager. The company also appointed J. M. Hyland to its New York sales office and transferred C. B. Chapman Jr. to the Detroit office.

Stanley Expands in Canada

Stanley Works of Canada Ltd., Hamilton, Ont., will erect an addition to its plant. The addition will contain 10,000 sq ft of floor space and will house new manufacturing facilities. This company is a subsidiary of Stanley Works, New Britain, Conn., maker of hardware, hinges, hand tools, portable electric tools, electric woodworking tools, steel strapping, metal stamppings, hot and cold-rolled strip steel.

Four Sales Divisions Set Up

Wheeling Corrugating Co., Wheeling, W. Va., established four sales divisions in its headquarters sales department. Division sales managers are: F. S. Neal, fabricated sheet metal products; E. H. Pace, mill products; W. B. Nern, culvert; L. C. Hollerbach, building material.

Delta Tank Building Plant

Delta Tank Mfg. Co. Inc., Baton Rouge, La., large producer of containers for liquid petroleum gas, is constructing a third manufacturing plant at Beardstown, Ill. The plant is scheduled for completion by September. Luria Engineering Co., Bethlehem, Pa., is the primary contractor.

Guided Missiles Inc. To Move

Guided Missiles Inc., subsidiary of Resdel Engineering Corp., will move in August to San Fernando road, from the present location at 2351 Riverside Drive, Los Angeles. The firm manufactures guided missile tracking systems under the direction of William E. Osborne.

Metal & Thermit Names Agents

Metal & Thermit Corp., New York, appointed as distributors for its electrodes, welding machines and accessories: Alaska Welding Supplies Inc., Anchorage, Alaska; Auto Gas Light & Appliance Co., North Bergen, N. J.; Butler Gas Co., New Brighton, Pa.; Fidelity Sales, Newark, N. J.; Littrell Parts Co. Inc., Reading, Calif.; McKinney Welding Supply, New York; Mer-

Packed in Bags and Shipped on Pallets

Each bag holds 25 lb. of contained vanadium, so additions can be made without weighing. Bags prevent contamination and are shipped on pallets for easy and economical handling.

Use this New, Easy Method

. . . FOR ADDITIONS OF VANADIUM

You can handle additions of vanadium conveniently and economically with ELECTROMET ferrovanadium packed in bags.

Check these advantages:

- *Convenient Packaging*—The alloy is packed in strong five-ply, paper bags. These bags have a wide blue band across the middle, as well as blue edges and bottom, for positive identification. The bags prevent contamination and preclude any chance of mix up with other alloys.
- *No Weighing*—Each bag (25 lb. of contained vanadium) can be added without weighing.
- *Handling Costs Reduced*—Pallet shipments are available at no extra charge. Each pallet holds about 4,000 lb. of ferrovanadium—2,200 lb. of contained vanadium. Pallets can be conveniently unloaded and handled in your plant by lift truck or overhead crane. Handling costs are reduced and inventory-taking is simplified. And you don't have to return the pallets.
- *High-Quality Material for Every Need*—ELECTROMET ferrovanadium is uniform in analysis, closely graded, correctly sized, and physically clean. It is furnished in four grades:

	Vanadium	Silicon max.	Carbon max.
High-Speed Grade	50 to 55%	1.50%	0.20%
Special Grade	50 to 55%	2%	0.50%
Open-Hearth Grade	50 to 55%	8%	3%
Foundry Grade	50 to 55%	approx. 10%	3%

✻ **Immediate Delivery**—Vanadium is readily available and can frequently be used in engineering steels to replace part, if not all, of certain scarcer alloys.

✻ **Engineering Service**—Our staff of experienced metallurgical engineers is always ready to furnish technical assistance in the use of vanadium. Phone, wire, or write one of ELECTROMET's offices for additional information.

The term "Electromet" is a registered trade-mark of Union Carbide and Carbon Corporation.

ELECTRO METALLURGICAL COMPANY
A Division of Union Carbide and Carbon Corporation
30 East 42nd Street UCC New York 17, N. Y.
OFFICES: Birmingham • Chicago • Cleveland • Detroit
Houston • Los Angeles • New York • Pittsburgh • San Francisco
In Canada: Electro Metallurgical Company of Canada, Limited, Welland, Ontario

Electromet
TRADE MARK
Ferro-Alloys and Metals

ritt-Holland Supply Co., Wilmington, N. C.; San Antonio Machine & Supply Co., San Antonio, Tex.; and Lee T. Staton, Riverdale, N. J.

AMF Opens Laboratory

American Machine & Foundry Co., New York, opened an engineering laboratory at Greenwich, Conn. About 170 will do experimental work on the science frontiers—in atomic energy, radar, rocket launchers, sonar. An estimated $500,000 will be spent on equipment and building alterations.

Dodge Mfg. Celebrates

Dodge Mfg. Corp., Mishawaka, Ind., celebrated its 75th anniversary June 17. More than 3000 guests took guided tours of the plant and saw Dodge products being produced.

Wallace Dodge founded the company in 1878 and patented the "magic wagon jack." Subsequently the firm's line of products was expanded to include his wood split pulley, forerunner of many inventions that were to boost the firm to prominence in power transmission machinery. Dodge still makes an all-steel version of the split pulley today.

Dodge has grown from one product to 6000; in capitalization, from $50,000 to more than $5.5 million.

Joseph E. Otis Jr., former head of Stewart-Warner Corp., has been president since 1939.

TO IMPROVE ALL TYPES OF ASSEMBLIES . . . produced in any quantity . . . large production runs a specialty . . . our engineers will be glad to assist in the design and application of any flat and round wire springs, stampings or Snap-Clips.

We are experienced suppliers to the automotive, aircraft, ordinance, appliance, electrical and many other industries where assembly problems occur.

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Subsidiary of Barium Steel Corporation

The CUYAHOGA SPRING Co.

10200 BEREA ROAD • CLEVELAND 2, OHIO

Parker Appliance Names Agent

Parker Appliance Co., Cleveland, appointed Sealtite Corp., St. Louis, as distributor of its O-rings.

Amsco Solvents Opens Branch

Amsco Solvents & Chemicals Co., Cincinnati, opened a branch office at 660 S. Fifth St., Louisville. A. M. Schulten is in charge of this office.

Lowery Bros. Expands

Lowery Bros. Wire Rope Splicing Service, Chicago, will start construction soon on a 15,000 sq ft plant in Fairfield, Ala. The company designs lifting devices and makes wire rope.

Casting Firm Being Dissolved

Bison Casting Co., Buffalo, has been sold to out-of-town interests by its owners, President Arthur W. Murray and Vice President Roland Forsyth. The new owners, who are unidentified, will offer the property at a public auction. Mr. Murray said the firm's business has been declining steadily in the last year and that operations were suspended about two months ago. The company was formed in 1942.

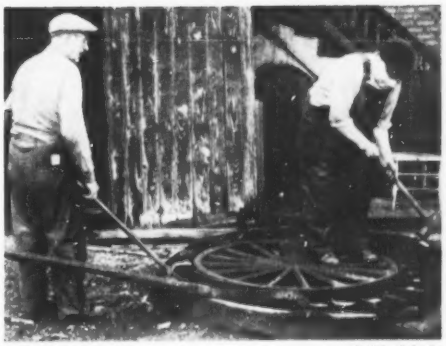
Pittsburgh Coke Names Agents

Protective Coatings Division, Pittsburgh Coke & Chemical Co., Pittsburgh, appointed seven firms to distribute its coatings. Appointees are: W. A. Case & Son Mfg. Co., Buffalo; Detroit Paint & Glass Co., Detroit; Minnesota Cem-Steel Co., Minneapolis; N. D. Fowler Co. Inc., Seattle; Anti-Corrosion Mfg. Co., Atlanta; S. D. Day Co., Houston; and Bodwell-Lemmon Supply Co., Cleveland.

A Living Page Out of the Past . . .

In the Heart of Chicago, an Old-Time Smithy Flourishes In Spite of Changing Times

Benjamin Levin, blacksmith, has shod horses and fixed wagons in the same Chicago shop since 1914. Today, junk dealers, grocery peddlers and carpenters still keep his forge busy.



While his assistant, Max Kaminsky, pounds the hot tire, right, the smith pries it onto a wheel

Wide World

It takes tools of horse and buggy days to operate a blacksmith shop. The machine which the smith is turning, above, shrinks wagon tires to proper size

Mr. Levin learned his trade of wagonmaker in Russia before the turn of the century. Below, he heats a steel wagon wheel tire on a gas-fired table

GLOBE

SUPERIOR LADLE BRICK

✓last longer

The greater heat resistance of GLOBE brick is well known in the steel industry. Because these bricks, wire cut or dry pressed, last longer—saving much time lost in refractory replacement—they help increase melting capacity. There is a type for every need, so let us place our experience at your disposal.

SERVING THE STEEL INDUSTRY SINCE 1873

The GLOBE BRICK Co.
EAST LIVERPOOL, OHIO

Blue Monday!

A washer's a "washout" without fasteners. But luckily for the housewives of America this catastrophe can never happen.

For Lamson & Sessions has long worked hand in glove with the appliance people to develop dependable engineered fasteners for home appliances.

If you, too, want to be *sure* of the "just right" fasteners for your product, check with Lamson during the planning stage. Our engineers will be happy to help you with your selection and possibly suggest fasteners that will save time and money on the assembly operation.

Remember, no matter what your fastener requirements, it's always *pleasant* and *profitable* to do business with Lamson & Sessions.

TAPPING SCREWS For Fast Sheet-Metal Fastening

Self-tapping screws require no nuts, no tapped holes. Therefore, they are important time-savers on all sheet metal assembly work. A choice of type "A", "B" and "C" threads. Heads available with slotted or Phillips driver recesses.

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Semi-finished, hot pressed, cold forged.

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Economical, vibration proof. Can be used repeatedly.

COTTER PINS
Steel, brass, aluminum and stainless steel.

"1035" SET SCREWS
Cup point type, hardened and heat-treated.

Production AND Engineering NEWS AT A GLANCE

STEEL BRIGHT DIP—A mirror-like, smooth finish is produced on steel parts, and burrs are taken off by dipping in a new chemical solution. MacDermid, Inc., Waterbury, Conn. supply the basic material, an oxidizing solution, for the process. Hydrogen peroxide is added to the tank before bright dipping starts. Known as "Mirrofe", the dip time required in the chemical polishing solution is 30 seconds to 4 minutes depending on condition of the base and the desired finish. The process works on cold-rolled, hot-rolled and regular stamping grades of steel. Work may be handled either on racks or in baskets.

WELCOME NEWCOMER—Magnesium has excellent forging characteristics, officials of Commercial Brass Co., Fowlerville, Mich., report. Their experience in making high-strength fittings for aircraft shows magnesium's easier to forge than brass or aluminum. Using extruded round rod slugs of AZ80 alloy, Commercial does its forging in mechanical presses at temperatures in the general range of other hot-working methods for magnesium alloys. Result: Savings in material and production costs.

CIRCUIT BREAKER—Shop air lines supplying pressures of 65 to 100 psi will operate a new compressed air circuit breaker for arc furnace switching duty. So reported J. E. Schrameck and J. K. Walker, of Westinghouse Electric Corp., East Pittsburgh, Pa., on June 17 before the American Institute of Electrical Engineers in Atlantic City. They predicted: "This breaker should be capable of two year's service with normal maintenance before replacement of contacts, arc chute splitters or working mechanical parts."

RADIOGRAPHY—Non-destructive tests of steels ranging from about ¼ to 1-inch thick with Iridium-192 provide 2 per cent definition. Similar results are obtained with aluminum and magnesium, according to Tracerlab, Inc., Boston. They supply several source strengths. Average gamma energy of IR-192 is about 450 kev.

HELP FOR DIE CASTERS—To connect various elements of the dies for the circulation of cooling water in their die casting machines the Dollin Corp., Irvington, N. J., uses short sections of rubber hose. When the oil spray used to lubricate dies and pins got on the hose, the hose covers became soft and sticky. Result: operator's gloves became gummy with rubber, and castings were soiled. Also the oil spray gradually penetrated to the inside of the hose; the tube and carcus swelled shut and cut off the cooling water supply. Neoprene hose was installed. The new hose which has both a neoprene tube and cover proved highly resistant to the oil spray that had been softening ordinary hose and causing failures. Production interruptions caused by hose troubles have practically disappeared.

OVERHEARD—Corridor conversations at the Welding Show in Houston indicate that weldability problems involved with 24S and 75S aluminum are coming to an end, thanks to a closely-controlled program of design and actual welding undertaken by the aircraft companies. Even 14S weldability has been improved . . . Another interesting talking point was the possibility of an integral, welded-tight aircraft wing structure that is, itself, one large fuel tank. Founded on the idea that the heavy press program will supply the central structure, skin would be welded to the frame to form a tight container. Forged structure itself would serve as the all-important tank baffles.

NEW PLASTIC DIE—Iron powder mixed with Epon resin gives plastic dies with a new order of durability. Kish Plastics Co., Lansing, Mich., is supplying blank and draw dies for automotive use on a variety of metal parts including stainless and aluminum. New material does not become brittle and its high resistance to abrasion greatly prolongs die life. The iron powder filled resin can be cast; it adheres well to cast iron and other materials; and, used dies can be rapidly resurfaced. Another property that comes in handy: Improved temperature resistance.

THIN STRIP—Rodney Metals, Inc., New Bedford, Mass., is now cold rolling stainless steel strip as thin as 0.002-inch. It is the only mill in the country that can furnish such thin gages as wide as 25-inches. In addition, a strand annealing furnace is being installed for bright annealing of stainless steel, to handle strip up to 24-inches wide. This will be the widest strand annealing in the country, the widest now being 12-inches. The company also produces carbon steel rolled to 0.001-inches, as wide as 24-inches, and prepainted steel strip that can be blanked, formed and deep drawn without marring the finish.

ALUMINUM ON STEEL—Weirton Steel Co., a large producer of tin plate, has established a research project at Virginia Polytechnic Institute to develop a method for electroplating steel with aluminum. Aside from possible use in manufacture of containers, aluminum coatings are valuable for protecting steel parts against scaling and corrosion in elevated temperature applications.

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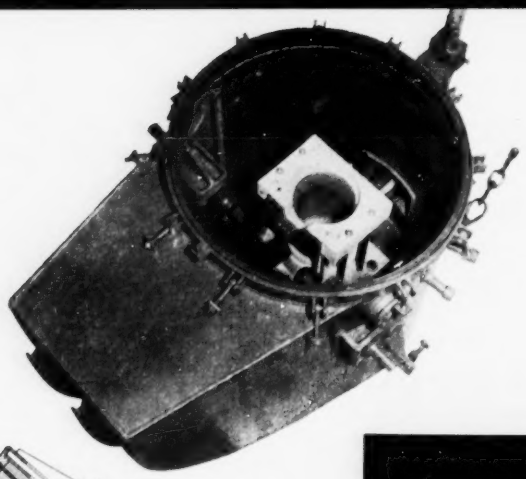
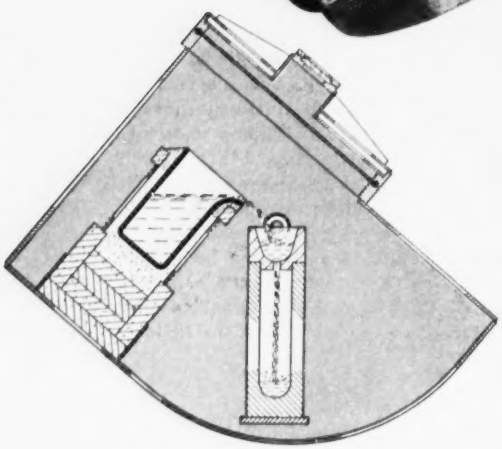
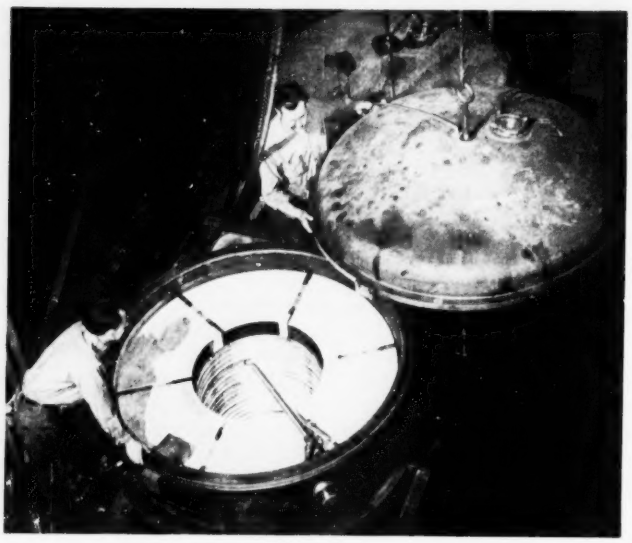


Ajax-Northrup vacuum furnace and pressure vessel for melting work. Fully encased mold pivots so that it remains vertical during the pouring operation

A large induction-heated high vacuum furnace built by F. J. Stokes Machine Co. Molten metal is cast, still in a vacuum, through a plug in the bottom of the furnace actuated from outside





By DR. ALLEN G. GRAY
Technical Editor

Vacuum Metallurgy Grows:

CAN YOU USE IT?

High vacuum metallurgical furnaces now offer a practical method for producing metals and alloys having properties not obtainable by conventional processing

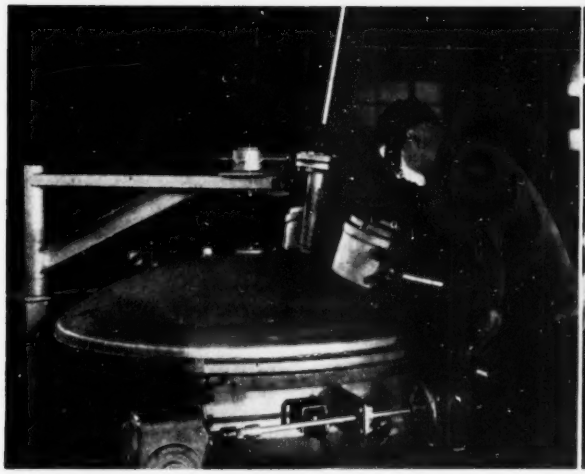
GET RID OF every possible molecule of air in a furnace and you will find that some very useful things happen.

Metallurgists are already convinced that the best atmosphere for some operations is no atmosphere at all. At pressures of 1 x 10^{-4} mm of mercury, oxygen content of a furnace is reduced to as little as 3 parts per billion. Casting, sintering, annealing and purifying of oxygen-sensitive metals is simplified.

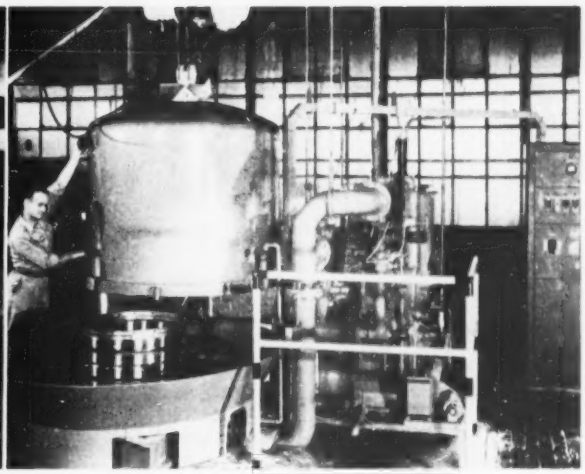
Vacuum furnaces do some things which cannot be done otherwise; for example, melting of titanium, zirconium and molybdenum.

Better Quality—For certain uses of common metals vacuum furnaces produce a metal of superior quality and performance. Increasing awareness of the importance of gas content to the behavior of metals and alloys has led to a widening interest in the use of high vacuum as a metallurgical processing tool. The embrittlement of certain metals by gas content, the unsoundness of castings resulting from gas liberation, the deleterious effects of gases on magnetic and other physical properties and other difficulties arising in fabrication as a result of gaseous compound inclusions have called attention to the potential advantages of metals with low gas content.

Vacuum melted steel is producing ball bearings that show durability beyond limits of experi-



This operator at Vacuum Metals Corp. plant is observing metal pouring from the crucible to the mold. Vacuum-cast metals show improved fatigue and stress properties



This specially designed high-vacuum dehydration system was constructed by Consolidated Vacuum Corp. Here it is being used to remove water from bearing assemblies

ments designed to measure their failure. In the superalloy realm 500-pound vacuum furnaces are just going into use for melting and centrifugally casting forging blanks for jet rotor blades. Conventional methods of melting give only a 30 per cent yield of bar stock. Tests on the new vacuum processing method give yields in range of 80 to 90 per cent.

Success of processing in vacuum rests on the complete elimination of gases from the melt before pouring, without resort to the addition of elements which leave residuals equally, but differently, troublesome in character.

Gases Go—Occurrence of blowholes upon solidification of castings is probably the most obvious effect of gases in molten metal. They may be caused by either simple decrease in solubility in the transition from liquid to solid or by a reaction during solidification, such as that of hydrogen and oxygen to give water vapor, or the reaction of carbon and oxygen to form carbon monoxide. In any of these cases, prevention of the detrimental effect lies in eliminating the gas or gases from the molten solution before the pouring operation.

In common metallurgical practice, this is most often done by the addition of an element which ties up the oxygen as stable oxides. This results in oxide inclusions and residual deoxidant in solution. Both may have undesirable effects on properties important to particular applications. By vacuum processing the gases may be eliminated either by controlled deoxidation with a gaseous product or by the simple decrease in solubility of the gas with decrease in pressure.

Conduct Better—Typical of the cases in which unsoundness results from gas rejection or water vapor formation is that of copper and copper alloys. In the case of high purity copper castings for electrical and electronic applications, use of solid deoxidants cannot be tolerated because of their effect in solution upon the conductivities.

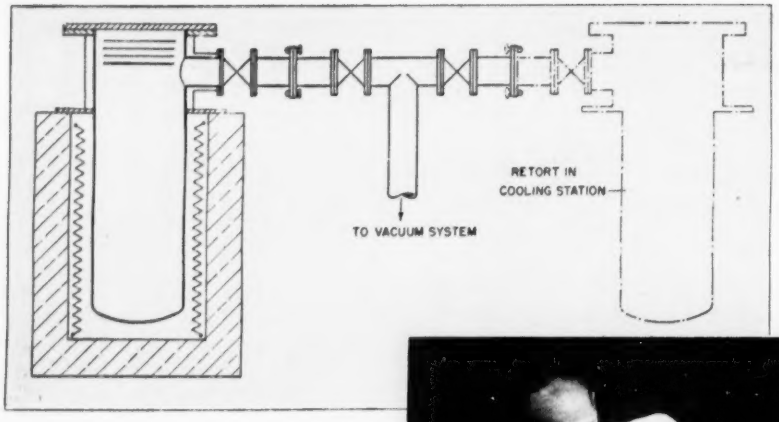
Vacuum deoxidation and casting permits the production of very sound high conductivity parts. In addition to the decrease in gas content and the resultant increase in soundness, vacuum processing also takes out other impurities which are volatile at low pressures. The application of vacuum methods to alloys in which the allowable inclusion content is critical has been demonstrated for certain sheet and wire products.

Improved Alloys — Tests on vacuum cast steels show improved fatigue and stress properties. The extraordinary cleanliness and freedom from gases can be seen in photomicrograph studies. Manufacturers using SAE 4340 in alternating stress applications are looking with interest at the improved characteristics of vacuum processed material and its relation to increased product life. Vacuum Metals Corporation, a subsidiary of National Research Corp., has recently made available vacuum-melted SAE 4340, and SAE 52100 steels. Vacuum-processed copper and nickel alloys are also produced.

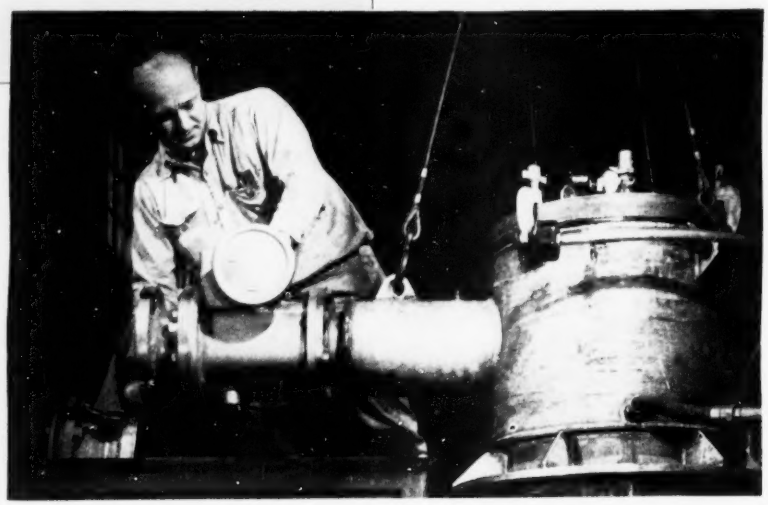
Others—Here are some other improvements noted in vacuum processed metals: Wire can often be drawn to finer size. Alloying elements such as beryllium, chromium, columbium, titanium, and zirconium, because of extreme purity of the melt are effective in smaller quantities. Surface characteristics of sheet are noticeably improved.

Vacuum distillation and sublimation is effective in achieving high purity of metals whose vapor pressure is sufficiently high within the temperature range of the vacuum furnace.

Separations—Zinc and antimony, for example, are removed from lead in the final refining process by vacuum distillation. Here, purity of the primary end product goes hand in hand with reduced operating cost, reclamation of a valuable by-product, and improved working conditions. Both zinc and lead can be distilled from silver in a vacuum furnace.



Resistance-heated, moveable retort vacuum furnace with two positions, one for heating, one for cooling. Resistance furnaces are used for melting materials of low melting points and for degassing and annealing metals. They have heated resistance elements external to retort



Recent work has shown that zinc can successfully be removed from aluminum alloys. Consideration has been given to the removal of zinc from scrap brass, and vacuum furnaces have been used to remove magnesium from aluminum.

Heat Treatment—Vacuum methods look promising for improving other important aspects of metal processing, such as heat treatment, annealing, bright annealing, sintering and aging. Although these applications are less fully developed than melting and casting, they are under constant study.

Exceptionally good results have been obtained in bright annealing of strip and sheet in vacuum. Surface condition and fatigue life of certain spring materials have been improved by aging in vacuum. Titanium and its alloys require heat treatment in vacuum. There are many indications which point toward this conclusion: The mechanical properties of metals which are related to surface conditions are in general responsive to vacuum heat treatment.

Estimations are that the average steel has about 0.02 per cent gas dissolved in it. If melted under vacuum practically all the gas comes out. Some manufacturers are simply vacuum degassing metal components by heating below their melting point in a vacuum. Those people most in the know say that under proper conditions about 50 per cent of the gas is removed —perhaps all that would ever come out under use conditions where this is a critical factor.

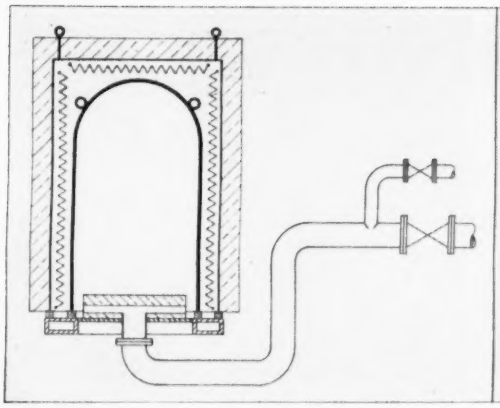
Out of Laboratory — Vacuum technology is sufficiently advanced to permit construction of high vacuum furnaces large enough to handle ton melts and even more. During World War II, the need for high vacuum in magnesium production and in certain phases of uranium purification led to the development of mechanical pumps, diffusion pumps and vacuum gages suitable for large scale operations.

High vacuum equipment is dictated by the over-all conditions needed to achieve the objectives sought in the processing operation. This will involve size and type of vacuum pumps, nature of vessels and method of heating.

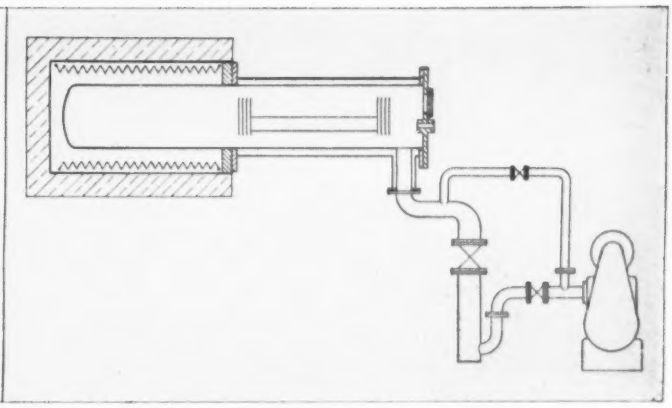
A useful method to classify vacuum furnaces is by the type of heating done, that is, resistance, induction and arc. Resistance furnaces are used for melting metals of low melting point and for degassing and annealing. The temperature limitation of externally heated furnaces is approximately 1850°F. Above this point the physical properties of materials of construction suffer impairment.

Heated Elements — Resistance-type furnaces use heated resistance elements external to the retort. The chamber containing the elements may be under atmospheric pressure or vacuum, preferably the former. Variations of the externally heated resistance furnaces are those of size and arrangement. A small horizontal resistance-type unit for vacuum annealing is widely used by the timekeeping industry for annealing springs and by the vacuum tube industry for annealing tube components. Another type uses vertical retorts which are moveable and are lowered into the furnace setting, and others which are stationary, with the furnace setting placed around them. These resistance furnaces are made to 40 inches in diameter and up to 50 feet in length.

For small furnaces it is possible to get up to a temperature of 2750°F or higher with resistance heating by using a molybdenum and tungsten resistance heater inside the vacuum unit. Some users prefer this type of furnace for high temperature work in preference to the corresponding induction unit.



Resistance-heated vacuum furnace with bell-type retor: and moveable furnace shell on fixed base. Heating elements are outside bell jar; base gasket is water cooled



Stokes resistance-heated two-zone vacuum furnace. Horizontal furnaces like the one above are used for vccuum heat treatment of electronic parts and fine springs

Induction Type—Vacuum induction furnaces are used chiefly for melting materials which melt at temperatures above 1850 F and for degassing and annealing. In the stationary type of induction furnace, the induction coil is placed inside the vacuum chamber and only the charge and the crucible holding it are heated. After the charge is melted a plug is pulled from the crucible allowing molten metal to run into the mold.

Another type is that in which the crucible and induction coil are actually tilted, while still in vacuum, to pour the melted charge into a mold placed beside the assembly. Provision can be made for mechanically stirring the melt and for adding other components after the main body of metal has melted.

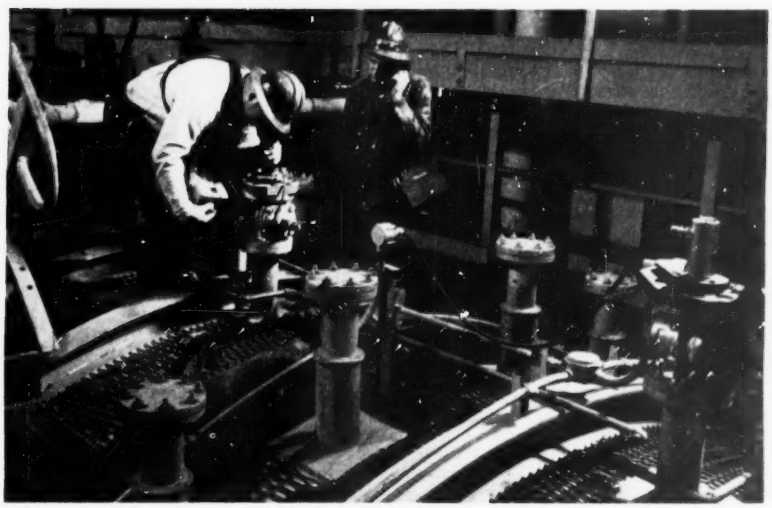
A modification of the induction furnace is the magnetic furnace which suspends the metal in an electromagnetic field and induces an electric current which heats the metal to its melting point. This unit is not yet fully developed but is under close study.

Arc Type—Vacuum arc furnaces are used for melting metals that have a very high melting point or some other characteristic that makes it impossible to melt them in a crucible by induction methods. Zirconium, for example, will combine with the material of any known crucible. Molybdenum on the other hand melts at such a high temperature that the crucible would melt first.

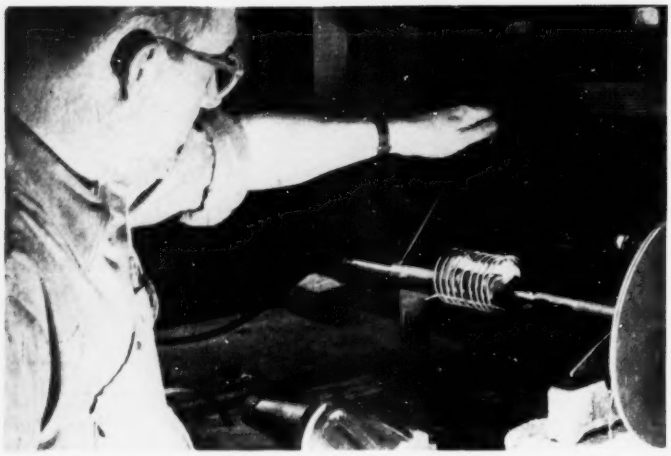
In the arc type furnace the arc is struck between the ingot being cast and a permanent graphite, molybdenum or tungsten electrode, or a consumable electrode made of the material to be melted. The ingot is contained in a water-cooled copper mold. The operation is such that as the molten metal falls into the mold it is cooled and solidified by the mold, contracting somewhat, so that it does not actually adhere to the sides of the mold. There is always a small molten puddle in the center so that a sound ingot results.

Those with most experience in this work feel that consumable electrode melting is probably the best method for handling these ingots. Consumable electrodes allow accurate control of the fusion rate of the metal and melt-off rate of the electrodes. More accurate alloying techniques are possible which in turn assure homogeneous ingots.

Combination Best—A compound mechanical vacuum pump in good working condition can produce a vacuum of well below one micron. However, its pumping capacity is small at low pressures. A more suitable arrangement is the combination of a single stage mechanical pump and a diffusion pump in series which will give a greater pumping speed and a lower ultimate pressure. Cost of the combination is less than that of the compound mechanical pump.



Top of special vacuum furnace some 20 feet in diameter and 150 feet long which Electro Metallurgical Co. uses to produce very low carbon ferrochrome



Carbide insert is heated to 2200° F inside the induction coil. Without removing the part from the coil, the operator bends the coil and then twists it to the proper angle

After the inserts are brazed on the cutter body, it is checked for balance. Stroboscopic light indicates the area of unbalance

Carbide with a Twist

Carbide tool tips are most often thought of as strictly rigid. Nevertheless, several companies are twisting and bending carbides to conform to their needs. Here's one

BENDING CARBIDE inserts to fit helical tool bodies is unusual enough to cause raised eyebrows in many tooling circles. But it can be and is being done.

Problem of the helical carbide cutters arose at Boeing Airplane Co., Seattle, when it was found that none of their suppliers could furnish the cutters twisted to shape. Nor was there much information to help Boeing engineers in twisting them.

Starting Point—A carbide-development group was established which started in on the problem. Work began with the hand-twisting and bending of a standard carbide insert so it would fit a helical tool body.

One end of the carbide bar was locked in a vise while the other end was held in a pair of pliers. The bar was heated to 2200° F and gradually twisted the desired amount. Then the pliers were used to bend the bar edgewise.

Job for An Artist—This bending-twisting act was tough to perform. It called for careful manipulation of an oxyacetylene torch in one hand and a pair of pliers in the other.

Operator had to judge the temperature of the carbide by color alone and he had to avoid letting it rise above 2300° F so the cobalt binder wouldn't boil out. Uniformity of results was impossible.

Inside Heat — Carbide development men next designed a mechanical bender-twister to work inside the turns of an induction-heater coil. With the heat developed internally in the carbide itself, the temperature is raised quickly to the correct value and is held there automatically during the bending and twisting.

Bender-with-a-twist contributes greatly to the speedy finishing of cutters for machining wing spars, body stiffeners and other portions of bombers.

Speeds Up Cutting—New helical carbide cutters cut metal enough faster to substantially reduce machining time. For example a 1½-inch-wide cut must be made in one wing stiffener. This cut is 76 feet long and varies in depth from 0.0625 to 0.400-inch.

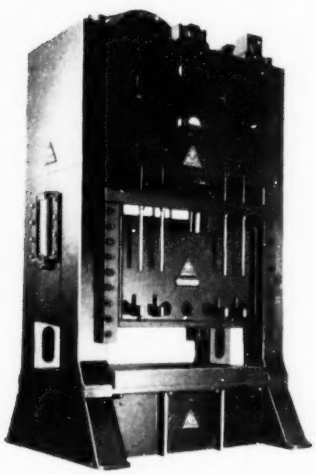
Using high-speed steel cutters with a feed of 50 inches a minute, and running the stiffener through the mill twice in order to get a smooth finish, machining time is around 45 minutes. With a straight-edge carbide cutter, the stiffener could be machined in 20 minutes with a feed of about 80 inches per minute.

Swish—But with a helical carbide cutter the job is whisked through in 7 minutes. One pass through the mill is required and when the cut is completed, it has a 100-microinch finish.

Maintenance on helical carbide cutters is less, in spite of the 3600-to-10,500-rpm speed, than it was with the previous cutting tools. Estimated tool life of the new cutters runs about three times that of a straight-edge carbide cutter; six times that of high-speed cutters.

Originally presented in Boeing Magazine.

Can You Depend on a Hazel Wand?



Near the turn of the century, a farmer who wanted to sink a well called in a local diviner who paced the premises with his hazel wand to find underground water. People who depended on hazel wands only to dig dry wells, didn't have modern geological information to turn to.

Sometimes ideas like the hazel wand method, with little more than time to honor them, can stubbornly persist. Some of this kind of thinking holds for example, that certain products must always be cast or always cut from solid, simply because of tradition. However, modern technology, and thousands of examples, show that up-to-date press methods turn out a lighter, better, less expensive product.

If you are concerned with the manufacture of metal products, you can depend on Clearing engineers to show you the way to stepped-up mass production at reduced cost. This service is yours at no expense. Call or write Clearing Machine Corporation.

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CLEARING PRESSES THE WAY TO EFFICIENT MASS PRODUCTION

Fast Mill Reversal Licks Split-End Slab Problem

Twin drive 10,000-horsepower motor reverses blooming mill rolls from 40 rpm to 40 rpm in one second and provides high production with minimum of electrical maintenance and downtime

QUICK acceleration and deceleration of the rolls on the new 46-inch high-lift blooming-slabbing mill at the South Side Works of the Jones & Laughlin Steel Corp., Pittsburgh, is made possible by the design of the electrical equipment without making the mill difficult to operate; moreover, downtime is minimized by a comprehensive system of spare and emergency equipment.

These highlights were brought out at the Annual Spring Conference of the Association of Iron and Steel Engineers, Hotel Statler, Buffalo, May 18-19, by A. W. Smith, steel mill engineer, Westinghouse Electric Corp., East Pittsburgh, Pa. and G. Kaufman, chief electrical engineer of J & L., coauthors of a paper entitled, "Electrical Equipment for the Jones & Laughlin Blooming Mill." The conference was sponsored by the Rolling Mill Committee of the association. Next year's conference will be held at the Bellevue-Stratford hotel, Philadelphia, May 3-5.

The authors emphasized that the rate at which the mill decelerates helps the operator to handle slabs that develop split ends. When the operator sees a split end coming out of the mill he can reverse the rolls and re-enter the slab. As the slab backs out of the mill, the split end is closed, and since the reduction has been made already on the end of the slab, the split does not reopen when it is entered again. Mills with longer reversal time may have difficulty in stopping the slab soon enough to keep the split ends from jamming in between the feed rolls or table rolls.

The 10,000-hp, twin-drive motor reverses the mill from 40 rpm to 40 rpm in only a second. This extremely fast change of speed is accomplished with rotating regulators and exciters with high forcing voltages.

Adjustable voltage auxiliary drives give fast, easily controlled handling of the ingot and rapid, accurate positioning of the screws. Every effort has been made to insure a smooth flow of steel from the ingot cars through the mill to the slab piler.

The main drive motor-generator set and control are arranged so that one of the 2500-kw generators can be disconnected for maintenance or repair with only a slight reduction in the power that is available at the twin drive motor shafts.

An emergency generator and control are included to take the place of any one of the adjustable voltage auxiliary generators that is out of service. Circuit changes for emergency operation of the main and auxiliary drives are obtained by a simple arrangement of transfer switches.

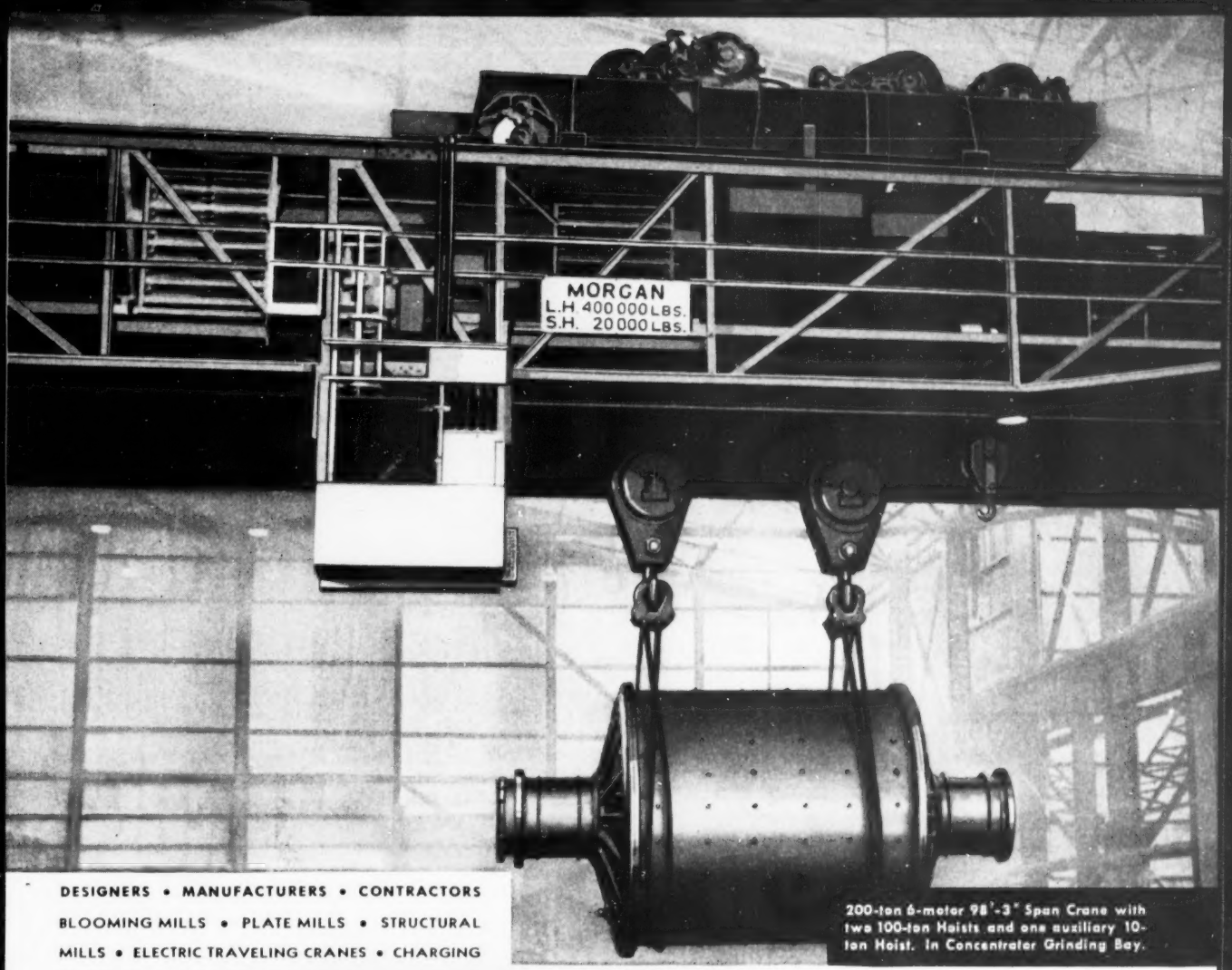
The result is a mill and drive arrangement that is inherently capable of high production with a minimum of electrical maintenance and downtime.

Other papers on rolling mill practice presented at this year's conference follow:

Mechanical Design and Operation of J & L's New Blooming Mill, by J. H. Mayer, assistant superintendent, blooming mills, Jones & Laughlin Steel Corp., Pittsburgh. The 12 soaking pits serving the blooming mill hold a charge of 1500 tons of ingots and are in line parallel with the ingot track thus providing more pit area in the same over-all space. This arrangement facilitates faster charging and drawing of ingots. Each pit has its own trolley-type cover carriage which makes the installation more flexible.

When ingots are drawn, they are placed in a remote-controlled, electrically-operated pot car which runs over a structural steel trestle to the receiving table. The use of such a trestle allows scale to fall beneath the track, thereby eliminating the necessity of a shutdown for scale removal. This type installation also eliminates the potential hazard to workmen when cleaning the area. Moreover, if an ingot is dropped on the trestle, structural repairs can be made faster and operations quickly restored, whereas, if an ingot is dropped on a concrete supporting structure, a major repair job usually develops.

Main mill tables, manipulators, screwdown and ingot buggies are on variable voltage that allows flexibility and speed of operation which are large factors in high



200-ton 6-motor 98'-3" Span Crane with two 100-ton Hoists and one auxiliary 10-ton Hoist. In Concentrater Grinding Bay.

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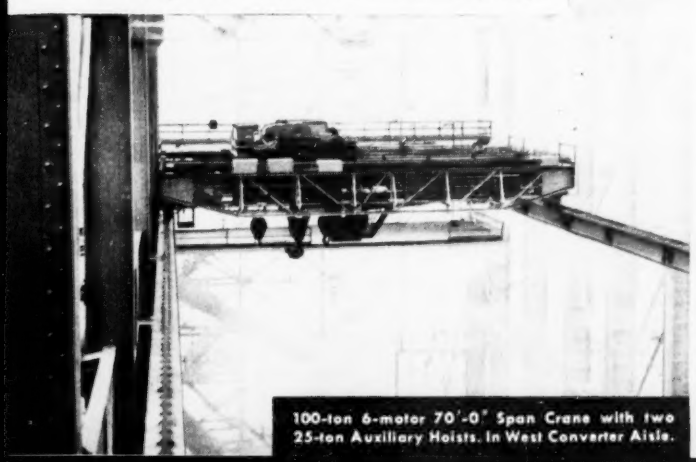

100-ton 6-motor 70'-0" Span Crane with two 25-ton Auxiliary Hoists. In West Converter Aisle.

100-ton 6-motor 70'-0" Span Crane with two 25-ton Auxiliary Hoists. In East Converter Aisle.

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tonnage rates. Through the use of this variable voltage control equipment, screw speed of 645 ipm is attained, which is believed to be the fastest screwdown drive in existence.

Throughout the design of the mill it was planned to duplicate many pieces of equipment. Accessibility for maintenance also was closely checked so that when failures developed, replacements could be made in short time and with few men.

Design and Application of Bronze Slippers in Universal Couplings, by J. R. Lottes, sales engineer, National Bearing Division, American Brake Shoe Co., Cleveland.

In recent years the universal coupling has become the most widely used. Its principal parts are the jaw half coupling; the bearing segment assembly, which is made up of two bearing segments on the bearing pin; and the spade half coupling. These bearing segments are more commonly known as slippers.

Constant investigation is being made to improve design factors, such as method of manufacture and alloys, in order to ultimately provide better service life.

Size is a limiting factor in the production of slippers by the permanent mold process. The maximum limit is about 15 pounds per slipper. Close tolerance and a cast surface finish of 100 to 125 microinches insure a good fit in the coupling, and the as-cast unmachined surface of the slipper provides a tough skin which adds to its life.

Some of the most common alloys currently used as slipper material include phosphorus bronze, gear bronze, silicon bronze, manganese bronze and aluminum bronze. Sound recommendations relative to a possible change of alloy or method of manufacture can only be made after a thorough investigation of the particular mill in question.

Service life at one plant was increased 200 per cent on a 400-pound slipper in a 40-inch 2-high blooming mill by changing from an unheat-treated aluminum bronze to a high-tensile manganese bronze. This alloy is able to absorb the pounding and impact transmitted to mill universals. Heat of friction and lubrication are important factors to be considered in the application of high-tensile manganese bronze. As service temperature increases, the elongation increases and the tensile strength decreases.

Nickel-aluminum bronze is excellent for constant heavy loading but its low elongation limits its use with intermittent loads.

Mobile Housing for a Photo Lab

Clam-shell doors of a big C-119 transport are opened to permit a special Trailmobile van to slide into the fuselage. The trailer houses a U.S. Air Force photo reconnaisance laboratory for use in combat zones. After a tractor backs the van up to the plane doors, the wheel and axle suspension is unbolted and a winch can pull the van into the fuselage over a steel-roller-covered floor

Electric Systems for Hot Strip Mills, by R. E. Marrs, steel mill section, industrial engineering department, General Electric Co., Schenectady, N. Y. The width gage consists of an electronic dielectric head mounted 15 feet above the hot strip—away from scale, heat, corrosive fumes or cobbles. In the head are two detector units mounted on an adjustable lead screw so they can be positioned over each edge of the strip.

Light from each edge of the strip is focused on separate photo tubes, the light passing through slots in rotating disks. One rotating disk and one photo tube is provided for each detector unit. A slot sweeps across the image of the strip edge at right angles to the direction in which the strip is moving. The image of the strip on the photo tube is much like that which would be impressed on the film of a focal plane camera—operating about 30 times per second.

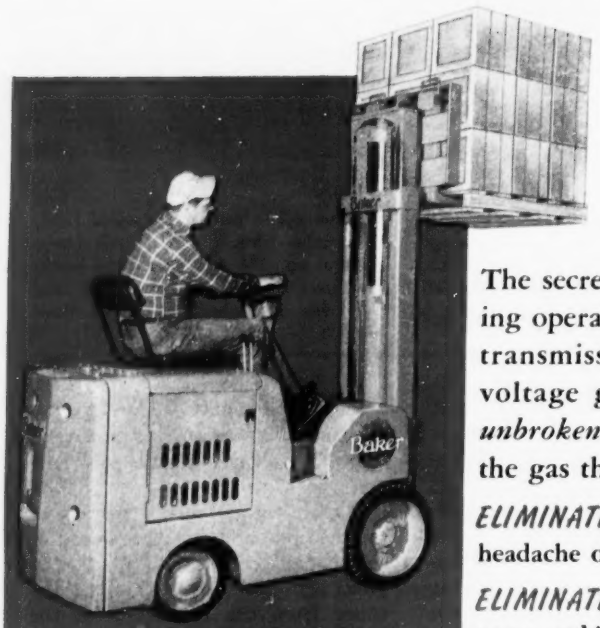
Signals cause each detector to produce pulsating square waves of direct current, the length of each pulse being proportional to the distance from the inner end of the sweep to the edge of the steel. Square waves are amplified and added together and then compared with a direct current to produce a current proportional to width deviation. If the strip shifts sidewise, one signal becomes longer as the other becomes shorter, but the sum remains the same.

Magnetic amplifiers are now receiving favorable consideration on practically every regulating system.

The author cautions that when ac supply to magnetic amplifiers is interrupted, controlled output goes to zero *instantly.* This may cause objectionable disturbance on the power bus — even machine flashovers—if more than just a vernier range is entrusted to the device.

Magnetic amplifiers used as a preamplifying device with rotating type regulators make an excellent

NEW BAKER gas-O-matic NEW TRUCK PERFORMANCE..



gas-O-matic has the smoothest acceleration and best "inching" characteristics of any fork truck, regardless of type of fuel or transmission. It is ideal for ramp work, for tiering, and for long or short haul operations. In fact it will perform almost any fork truck job better and cheaper.

gas-O-matic is a revolutionary new gasoline-powered fork truck with electric motor drive—designed from engine to drive wheels to incorporate the best features of both gas and electric trucks.

The secret of its outstanding performance and amazing operating economy is the new Baker GAS-O-MATIC transmission system. A specially designed variable voltage generator provides an incredibly smooth *unbroken* acceleration curve—directly controlled by the gas throttle.

ELIMINATION OF CLUTCH cures the biggest maintenance headache of gas-powered trucks.

ELIMINATION OF CLUTCH AND GEAR SHIFT prevents jerky starts and "step-ladder" acceleration.

ELIMINATION OF CONTROLLER AND RESISTANCE BANKS of electric and gas-electric trucks means fewer moving parts and results in less down time and lower maintenance costs.

gas-O-matic will do everything a comparable straight gas truck can do—do most of it better and more economically . . . plus some things that straight gas cannot do.

It will do almost everything a battery-powered fork truck can do—and some of it better . . . plus a few things that battery-power cannot do!

—Yet it costs little more* than a straight gas truck of the same capacity, and only about half as much as a battery-powered electric with charger and two batteries!

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* **gas-O-matic** *model illustrated, 4,000 lb. capacity costs only* **$4895.00**

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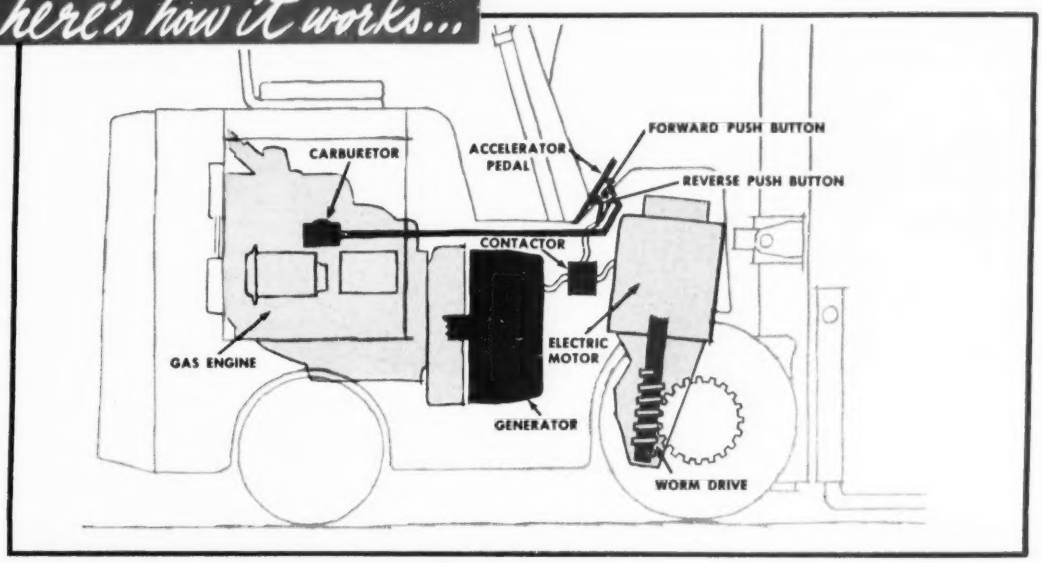

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combinatioin. Such could be used for vernier portion in many regulating schemes.

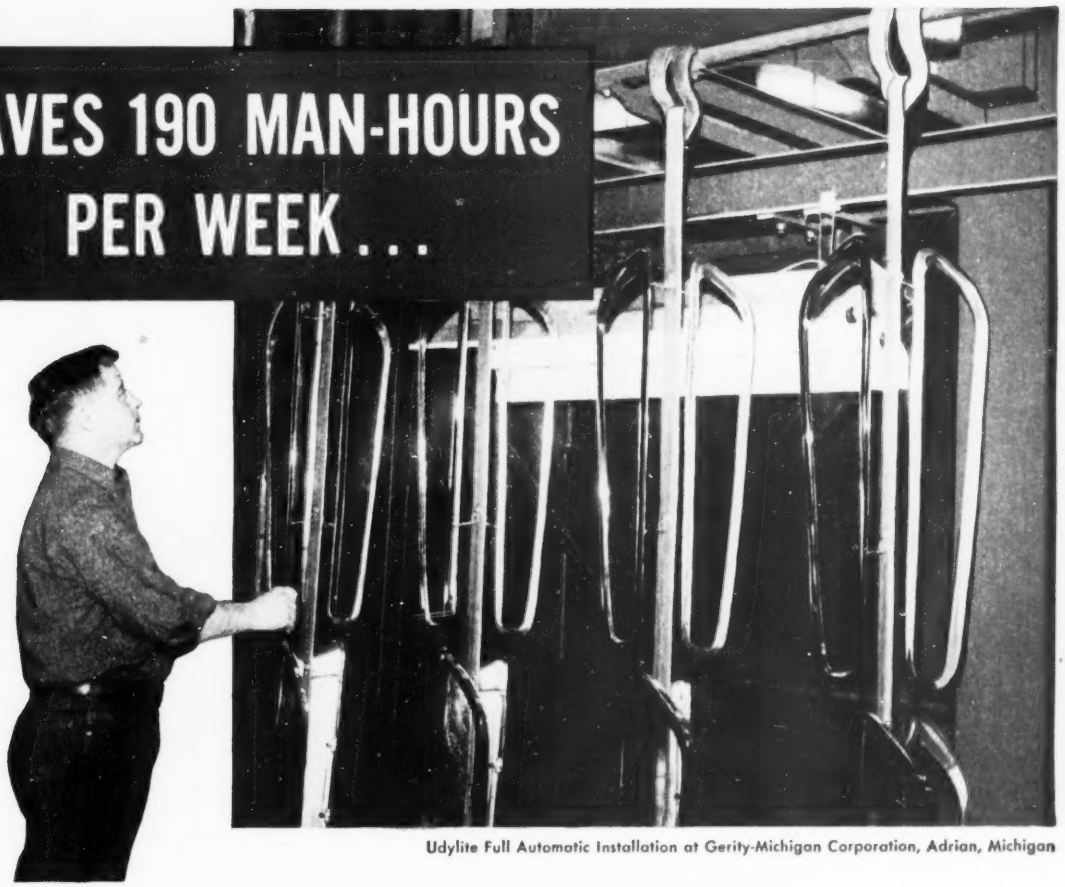
A New Theory of Hot Rolling, by G. S. Mican, division superintendent of rolling, United States Steel Corp., S. Chicago, Ill. Contrary to prior concepts, when all other rolling conditions are held constant, progressive incremental increases in the coefficient of friction in the approximate value range of 0.3 to 0.55 result in incremental decreases in rolling pressures and decreasing trends of roll wear, roll breakage, power consumption, and surface tears of the rolled material. Incremental increases in the coefficient of friction in the range greater than the approximate 0.55 value result in the rolling pressure and related effects remaining constant at the minimums attained at the 0.55 value.

When all other rolling conditions are held constant, progressive increases in roll diameters result in progressively increased rolling pressures in general conformance with prior concepts. Trends for the surface tearing of the rolled material, however, decrease progressively with incremental increases in roll diameters.

Flying Shears for Billet, Bar and Rod Mills by E. S. Murrah, electrical engineer and J. H. Hitchcock, director of research, Morgan Construction Co., Worcester, Mass. Electrically-driven flying shears have been employed extensively for shearing hot and cold strip at mill delivery speeds, and in cold processing lines. The knives are rotated by two opposing crankshafts, and are guided by cam-operated tail rods which hold the knives parallel to each other and perpendicular to the bar during the cut, and which accelerate the knives to clear the path of the bar quickly after completion of the cut. Each shear is driven by multiple dc motors supplied with power from a motor-generator set. The usual pattern of operation is to accelerate the shear from rest to crop the front end of each billet, divide the billet into uniform successive lengths by brief control retardation between cuts, and stop the shear after complete division of the billet.

This type shear also lends itself to the crop-and-cobble type operation for bar and rod mills.

SAVES 190 MAN-HOURS PER WEEK . . .



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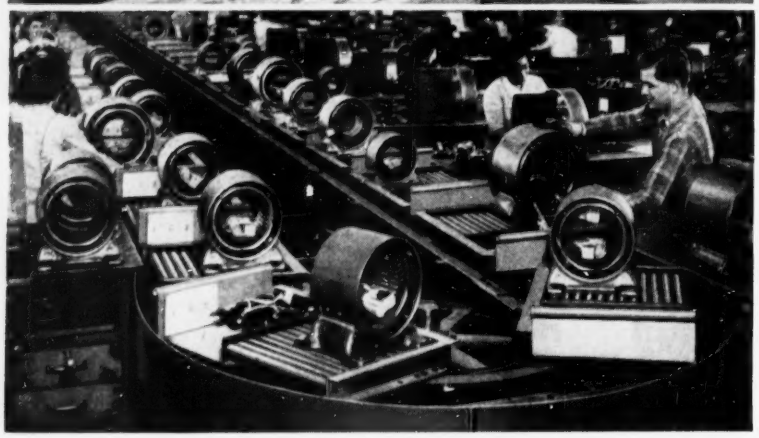

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Rolling Up Cone Seams

Seamwelder replaces seven spotwelders to make exhaust cone work automatic

WELDING machine developed at Solar Aircraft Co., San Diego, Calif., is slashing manufacturing and equipment costs through an innovation in resistance welding technique.

Solar's rollwelder is used to make circular seamwelds on J47 jet engine exhaust cone assemblies automatically. The machine joins afterburner fuel manifolds to the engine exhaust cone. One rollwelder replaces the seven spotwelders formerly required to do the same work.

The company reports cycle time for the welding operation has been

PLANETARY GEARED ROLLWELDER
. . . moving head; stationary work

cut almost 80 per cent—from four hours to 45 minutes. One man operates the unit, where formerly seven operators were needed. Handling of the parts has also been significantly reduced.

Operation — The rollwelder makes a 3-inch diameter seamweld around the support bosses of the fuel manifold. Usually in resistance welding the electrodes remain stationary while the part being welded is moved. With the new unit the seamwelder head, which is the moving member and constitutes the upper electrode, automatically rolls around a circular path while the work remains

New development

in rare-earth research

Lan-cer-amp # 10 is the fruition of continuing research in the plant and laboratories of American Metallurgical Products Company. It consists of vacuum-produced rare-earth metals combined with a revolutionary new catalytic agent and sealed in a heavy steel bomb which sinks to the bottom of the ladle before it disintegrates, thus providing better mechanical dispersion in the molten metal. Lan-cer-amp # 10 requires no changes in melting practice. It is the least expensive method, currently in existence, of adding rare-earth to steel. Full production has been attained and orders are being accepted for reasonable delivery.

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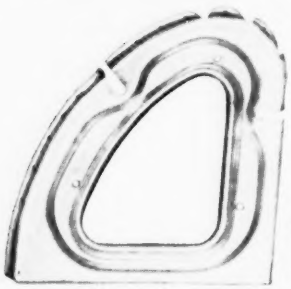
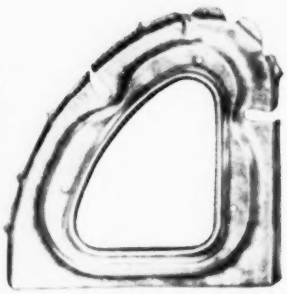


Formed in a Verson-Wheelon Press

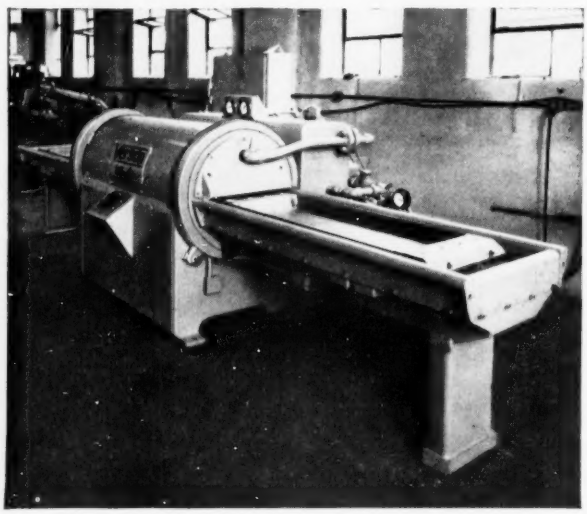


Formed in a conventional rubber pad press

The best way to judge the new Verson-Wheelon Direct Acting Hydraulic Press is to compare its work with that of a conventional rubber pad press. The typical examples illustrated above show the difference. Flanges of Verson-Wheelon formed parts are completely formed. Flanges formed in a conventional rubber pad press are often wrinkled and incomplete and require considerable hand finishing.

Add to this the substantially lower price of the Verson-Wheelon unit, its compactness and its elimination of the need for an expensive foundation and you'll see how economy has been combined with superior performance.

Bulletin VW-52 gives design and operating data. Write for a copy.



Verson-Wheelon Press rated at 2500 tons. Operating pressure is 5000 psi. Tray size is 20" x 50". Larger tray sizes and higher pressures are also available.

A Verson Press for every job from 60 tons up.

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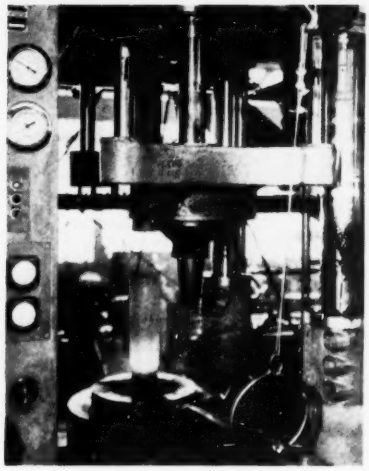


Furnace Fusing Tester

This miniature furnace is part of the laboratory pilot plant in the enlarged research center operated by Pfaudler Co., Rochester, N. Y. Here glass is fused to a steel crucible for experimental purposes. The glassed-steel and alloy equipment maker has made such tests standard for all new glasses and regular production work

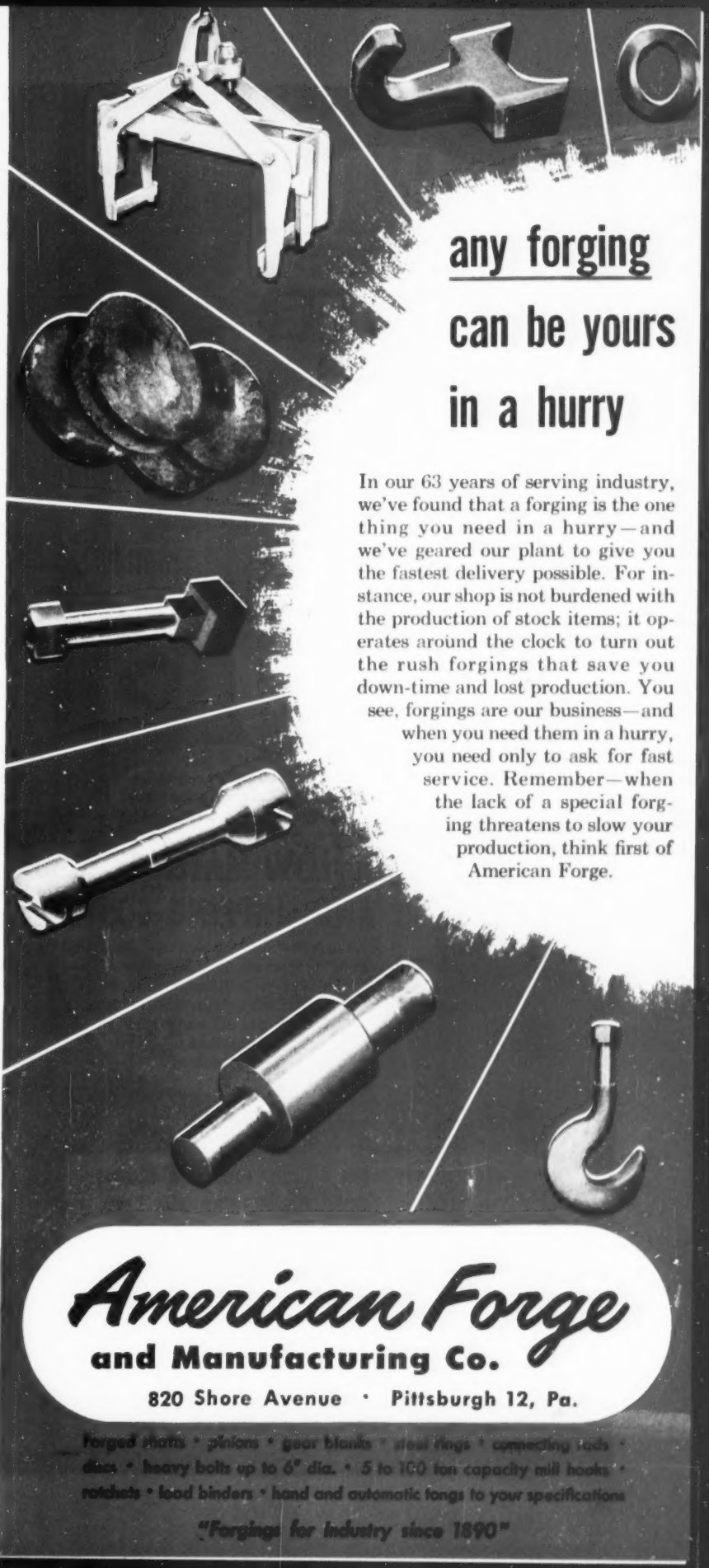
stationary. Another feature is that the moving upper electrode carries approximately 14,000 amp through a ½-inch diameter shaft and a floating joint.

The lower electrode is essentially an air-operated clamping fixture. After positioning the work and closing the lower electrode, the welding operation is completely automatic. Welding speed is adjustable from 8 to 48 inches per minute.

Special but Versatile—Although the Solar unit—known as the planetary geared rollwelder—is a highly specialized machine, it is also extremely versatile. In less then 30 minutes, the special tooling can be replaced by conventional tooling, making the machine a standard universal (circumferential or longitudinal) seamwelder.

Versatility has also been stressed in design of special tooling. Size of the upper electrode's circular path may be varied from 0 to a 6-inch radius, making the machine adaptable to a wide range of circular welding operations.

Designed by Solar, the machine was built by Taylor Winfield Corp. Basic unit is a medium series, 36-inch throat, 150-kva transformer, low inertia head seamwelder.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Shock Waves by Test Tube

SHOCK WAVES, similar to those produced by an atomic explosion, are being created in miniature in a new shock tube recently constructed by General Electric jet engine engineers to study combustion processes. The device creates shock fronts which travel faster than the speed of sound down the length of the tube.

According to the Aircraft Gas Turbine Division's components development section, the shock front is photographed and studied to determine the effect of such waves on the combustion processes in jet engines. With this knowledge it should be possible to determine and develop more efficient methods of combustion at the extremely high speeds at which jet engines operate in flight.

Design—The shock tube is composed of two chambers, each having glass windows for high-speed photographic observation. Pressure is built up in one chamber and released in the other. A thin diaphragm separates both chambers. When this diaphragm is punctured, the pressure difference is great enough to send a shock wave the length of the tube faster than the speed of sound as the gas in the high pressure chamber rushes into the low pressure chamber.

In the combustion chamber, fuel is sprayed into compressed air and ignited. Resulting fire rapidly expands the hot gases and this ter-

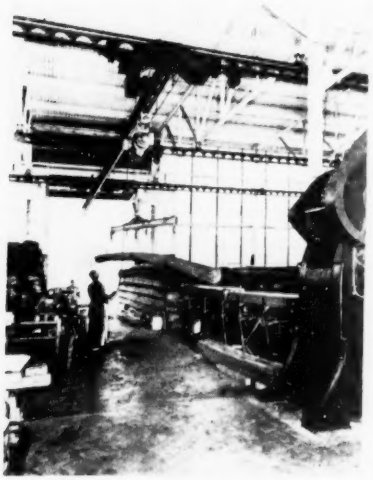
rific force blasts its way through the turbine wheel and out the exhaust cone of the engine.

Unloading Timesaver

SUBSTANTIAL dividend is being earned by Kortick Mfg. Co., San Francisco, Calif., on a completely motorized bridge installation.

Because the Cleveland Tramrail bridge is of 5 tons capacity, the rods, bars and angle iron which are used for the manufacture of pole line hardware, can be bought and handled in 5-ton bundles. This eliminates a bundling charge made for smaller bundles. Savings: $2 per ton. Because Kortick takes in an average 200 tons per month, the monthly savings amounts to $400.

Interlocking Extension — The bridge interlocks with an outside Tramrail track that extends over a railroad track. This enables the hoist carrier to deliver steel directly from railroad cars to any point inside the building served by the bridge. Because of this feature and the fact that heavier bundles are handled, a saving of about 2 hours unloading time is made per 50-ton car of steel over the former method which employed a 3-ton hoist. The entire setup operates by pushbuttons from the floor.



MOTORIZED BRIDGE
. . . direct delivery to any point

Total savings, says Kortick, are estimated to be in the neighborhood of $5000 yearly.

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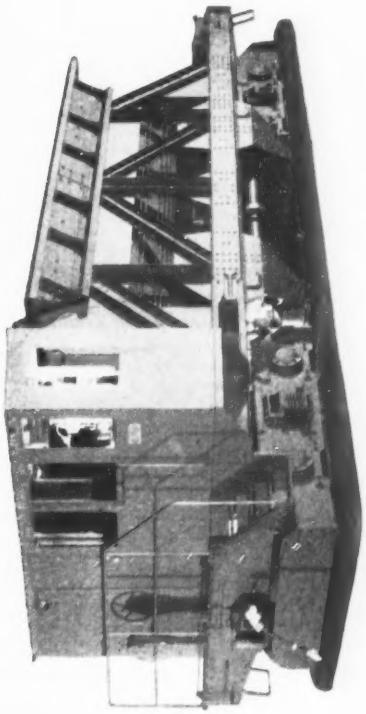
See ATLAS
TRANSFERS - SCALE CARS
COAL CHARGERS - COKE QUENCHERS
60-TON BOTTOM DUMP ORE TRANSFER CAR

This is one of the latest Atlas Transfer Car designs arranged for modern hydraulic operation. It provides close control of the discharge and eliminates freezing of air lines in the winter. A hydraulically operated pusher arm is provided of the latest horizontal telescoping type. The brakes also are hydraulically operated and apply automatically if pressure is low or if power fails.

At this plant the car must cross over to the coke track to shift coke cars. There is no conductor rail on the coke track so the car is equipped with a motor-driven cable reel attachment, enabling it to perform this switching function. When operating on the cable reel the collector shoes are cut out and automatically raised off of the conductor rails. The cab is overhung to give the operator a line of vision down the side of the car.



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NEW ADVANCE IN QUANTOMETRY

ARL Industrial Research Quantometer Shows New Versatility

Greatly Improved IRQ* Hailed As Most Flexible Direct-Reading Instrument Available

The new, flexible IRQ provides industrial laboratories with a means of quantitatively measuring a large number of elements simultaneously in a few minutes. It thus allows analytical research and control heretofore considered impossible. By incorporating movable and fixed receivers, any of the elements amenable to spectrochemical analysis can be measured with complete flexibility as to choice and order and with little restriction as to number. This versatility of the IRQ permits high speed analysis of all types of materials. For example, the unit is capable of giving an accurate chemical analysis of such widely diversified materials as high and low alloy steels, pig or cast irons, aluminum, zinc, lead and copper base alloys, minerals, ores and biological and pharmaceutical substances.

Automatic pen recording provides duplicate copies of the analyses on direct-reading charts during the few minutes required to complete the operation.

A unitized type of construction provides great accessibility and serviceability and allows quick changes to be made in the elements, the concentrational ranges, and the recording order of interest.

The speed, accuracy and flexibility of the IRQ makes it a "must" for every really well-equipped laboratory. Under actual operation, it will quickly return its cost by extending analytical research and control at greatly reduced expense.

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Slip-Type Overload Clutch

A line of adjustable torque-limiting clutches that provide overload protection for machine drives in a wide variety of equipment is announced by Morse Chain Co., Detroit. These slip-type friction clutches act as automatic shear pin mechanisms and avoid the time and labor required to insert new pins.

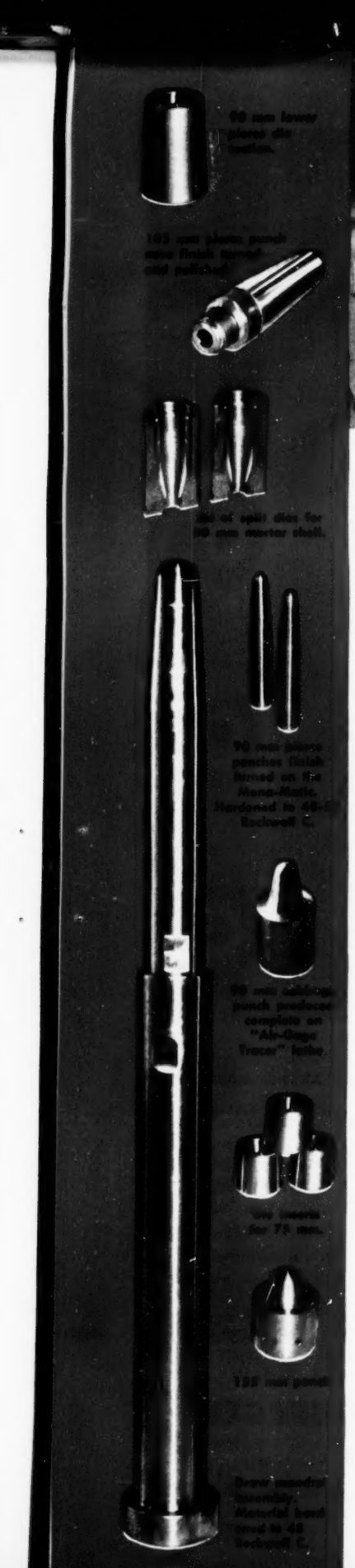
Particularly adapted to roller chain drives, they are designed to be used in connection with standard Morse type A plain plate roller chain sprockets. Other types of rotating members such as gears, pulleys and sheaves can also be used.

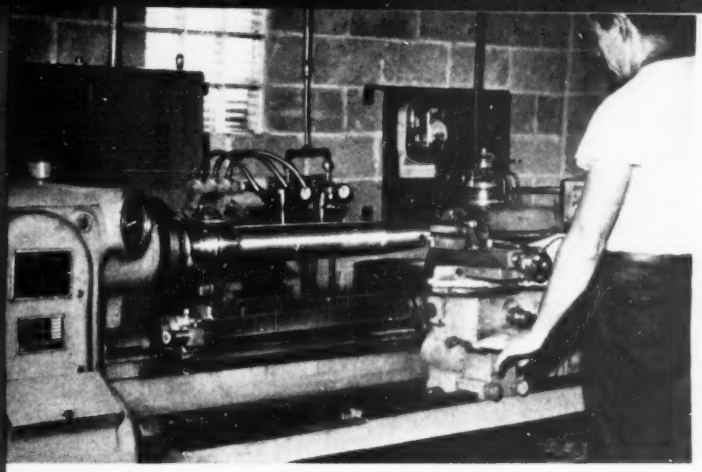
Pneumatic Handyman

IF YOU still think of a pneumatic tube system only as a retail store cash handler, you should have a look at some applications already made by Lamson Corp., Syracuse, N. Y. The company's 4-inch tube carriers yield only to size limitations in speeding items around plants and offices. Shape and nature of products handled includes small tools, such as twist drills and adjustable wrenches; bottles containing chemical samples, test samples and medicines; paper work, such as IBM cards, slips and correspondence; metal parts for lab analysis. One firm even distributes cokes and insecticides to remote departments.

Acme Steel Conducts Contest

Acme Steel Co., Chicago, is conducting an industry-wide contest to bring to light new ways in which flat steel strapping can be used to help all industry do a better job of packing, shipping and handling materials. Prizes range from an all-expense trip to Bermuda for two or $1000 cash to $100. Judges are: Ralph F. Bisbee, Westinghouse Electric Appliance Division, Mansfield, O.; Edward J. Dahill, Association of American Railroads, Washington; Dr. Spencer A. Larsen, Wayne University, Detroit; Howard M. Palmer, president, Material Handling Institute, Pittsburgh; and Paul O. Vogt, national chairman, Society of Industrial Packaging & Materials Handling Engineers, Chicago.

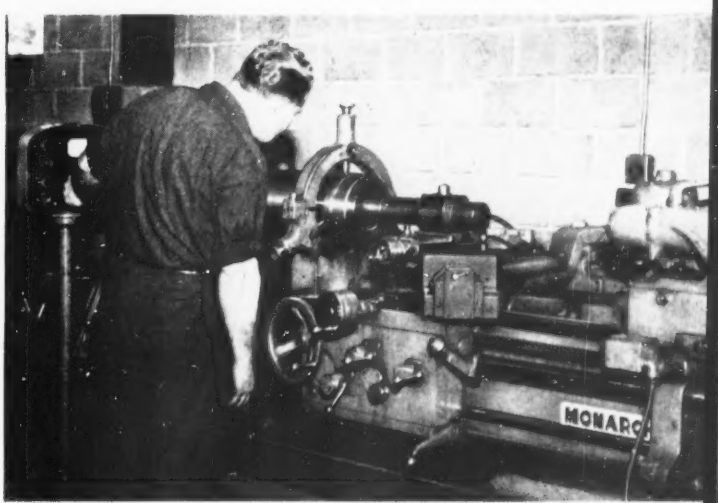




Rough turning draw and pierce mandrels on the Mona-Matic. Sizes include 90, 105 and 120 mm shell. Material is hot work die steel. Billets often weigh up to 210 lbs. Depth of roughing cut is up to ½" on side representing a saving of 3 hours per piece over conventional engine lathe procedure. Finishing cut is taken after heat treatment.

Monarch Air-Gage Tracer Scores GRAND SLAMMO ON THE AMMO

Contour boring die liners on a Series 60 using a 30" long boring bar. Material is a forged hot work die steel billet 10" O.D. x 20" long. Total tolerance held is .002" to .003". The "Air-Gage Tracer" method saves up to 6 hours per piece.



Just put these two facts together. **(1)** More hot forged tooling for the shell program is produced by the Diversey Engineering Co. (Franklin Park, Illinois) than by any other plant. **(2)** The turning equipment is exclusively Monarch, with every machine — Mona-Matics, Series 60's, and Heavy Duty lathes — Air-Gage Tracer controlled. Some of these are swiveling types with Auto Cycle Unit. Here, more of these lathes than in any other shop doing similar work, produce on a 24-hour-a-day, 7-day-a-week schedule.

Significance? This equipment delivers a 200% increase in production compared with less modern methods generally employed. Its dependability is such that no shell line in the country depending on Diversey hot forged tooling has failed to keep moving.

This manufacturer currently has on order 6 additional machines—all sold by the performance of present equipment. Why not take a tip from Diversey and load up with production ammunition like this for yourself? Just fire us a request for our complete Air-Gage Tracer Booklet No. 2606 . . . *The Monarch Machine Tool Co., Sidney, Ohio.*

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ACCURACY • ECONOMY • LONG LIFE
TURNING MACHINES

for a Good Turn Faster
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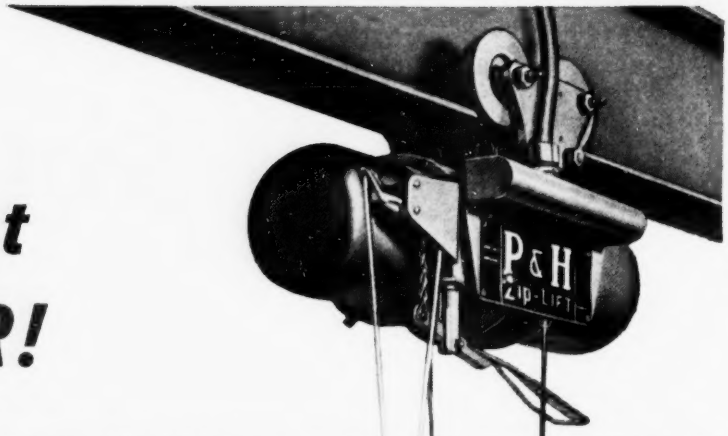

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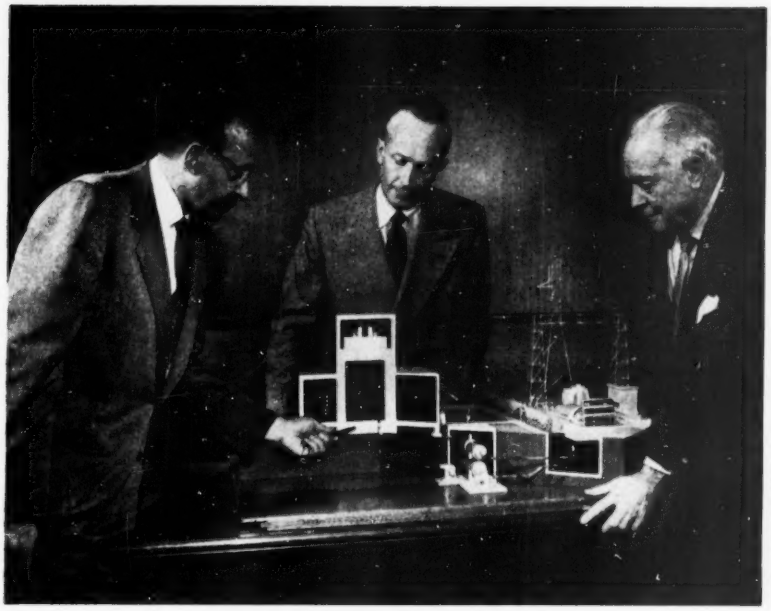

ATOMIC ENERGY BUILT TO SCALE

. . . another firm explores the market for customer potential

North American Lands in Industrial Atom Picture

NORTH AMERICAN Aviation Inc. has designed an atomic power generator and is ready to build a pilot plant to study industrial and domestic electrical power production. This was the report made by J. H. Kindelberger, board chairman, when the firm exhibited a scale model of the proposed plant recently.

"We know a nuclear reactor of our design will generate electricity," said Mr. Kindelberger. Stating that his company is in the market for customers, the executive said North American was ready to engineer and build the $10 million pilot project as soon as conditions permit.

Restricted Phases—The nuclear reactor design was developed by the aircraft company under contract with the Atomic Energy Commission. While certain phases are classified restricted data, plans are available for inspection through the commission by organizaticns cleared for access.

The scale model, complete with flashing lights, moving control rods and Geiger counters, was built in the company's Downey, Calif., research laboratories. Dr. Chauncey Starr, director of the firm's atomic energy research program, explained that a pilot-size version of the scale model would generate about 8000-kw of electrical power—or enough to supply 2000 average homes with electricity.

Harnessing Power — Electrical power would be generated in the pilot plant from heat produced by the atomic fission process. Heat would be absorbed by a liquid metal passing through the reactor, then piped to an ordinary water boiler to produce steam. The steam would be used to drive a turbine generator combination such as those employed by conventional power plants to produce electricity.

Externally, the pilot setup would resemble an ordinary power plant, except for lack of coal, oil or other similar fuel handling equipment, and lack of smoke or fumes. If engineering and construction would begin immediately, says Dr. Starr, full operation could be expected in about 2 years.

Although additional scientists and engineers would be necessary to conduct special research and investigation, Dr. Starr says routine pilot plant operation would require no more personnel than a conventional plant of the same capacity. In addition, he says it would be equally safe.

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Ideas! That's what your P&H hoist dealer can give you! Shortcuts to help you save time! Methods to make man power go further! He'll be glad to put all his knowledge at your disposal. Ask him into your plant. Let him show you how to save important money every month with modern "thru-the-air" handling.

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P&H HOIST DIVISION
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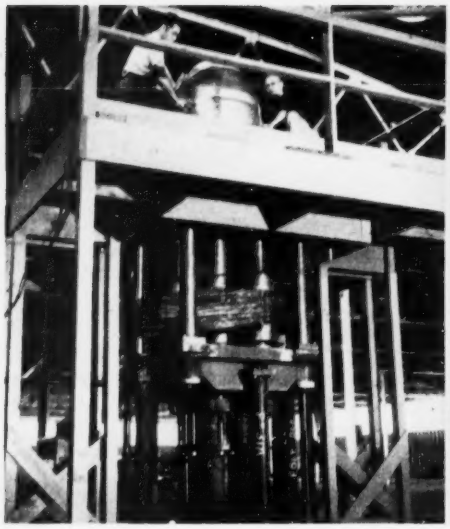
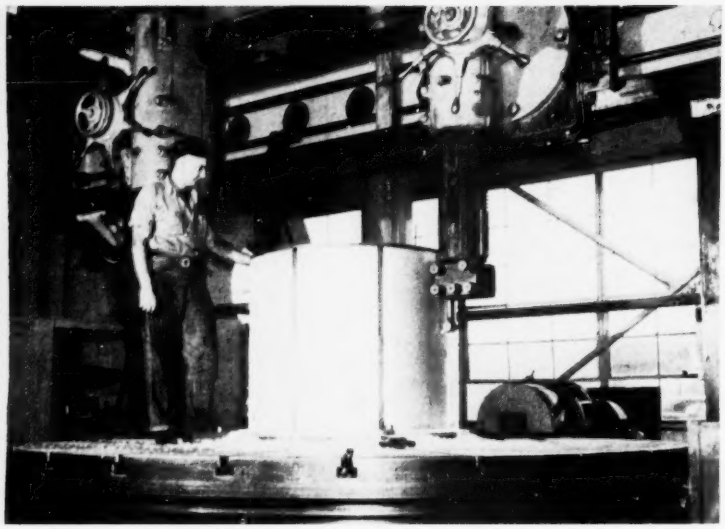


Normally installed in a huge pit, Ryan-designed 4800-ton expanding mandrel was put immediately into service



King-sized job of machining the segmented expanding tool was handled in National Steel & Shipbuilding shops

Radial Forming Gets Added Muscle

Originally developed as a means of forming wing tank sections at Ryan, success of 1200-ton machine is responsible for new 4800-ton model. Precision-forms big jet parts

EXPAND-FORMING technique for fabricating aluminum and stainless steel sheet metal parts has taken on new dimensions at Ryan Aeronautical Co., San Diego, Calif. Originally developed for production of the largest external wing fuel tanks ever designed, the new method has been so successful that it is being extended to the manufacture of large components for jet engines and other turbine power plants.

Principal role in the new forming process is played by the huge expanding mandrels which plant engineers have designed. Probably the largest machine tool of its type in the world, Ryan's latest "heavyweight" can exert radial forces of 4800 tons.

Becomes Essential — With the new technique, which is relatively economical, the precision forming of large contoured closed sections to exact dimensions is a reality. The requirement for smooth contours and close tolerance is becoming increasingly important because of the advent of super-sonic jet-propelled aircraft. It is essential that the airfoil as calculated by the aerodynamicist become a reality on the actual aircraft.

High speed planes demand contoured engine nacelles, wing tanks and other external appendages with the smoothest aerodynamic surfaces. Jet engines use substantial amounts of tubular structures of sheet metal and machined members which carry high precision requirements. And, the aircraft itself is rapidly taking on the configuration of a winged missile, with a circular cross-section and carefully tapered airfoil extremities.

Rolled Shapes—Expand-forming process involves the fabrication of these contoured components by rolling the sheets into cylindrical shapes, which permits maximum forming with least elongation, and welding joints with automatic heliarc welding machines. These fusion welds join the metal edges in a single-thickness bond of uninterrupted metal which is scarcely distinguishable from the sheet itself. Then the sections are placed over the segmented shoes of the expanding mandrel and stretched into shape and dimension.

Method is superior to conventional techniques of forming large contoured surfaces by hammer deformation or spin forming. It does not produce the warpage, typical of hammer forming, which causes

"oil can" effect. It avoids thinning the metal, with resultant loss of strength, as sometimes occurs in spinning bell-shaped sections. It affords a reliable process by which parts can be consistently and accurately duplicated. And, it is more economical than conventional methods because the aluminum shoes used for forming to different contours are less expensive than other types of tooling, and no excess material is wasted as "flash" to be trimmed away.

Got to Be Big—Made from tough, heat-resistant stainless steel alloys, jet engine parts require Herculean force to stretch-form. To exert these tremendous pressures, engineers conceived a behemoth of welded steel which has a 4800-ton push. Constructed by the Waldrip Engineering Co., Hollydale, Calif., this massive new tool stands 17½ feet high and tips the scales at 34,000 pounds. Its three major assemblies are welded together with more than 1,000 pounds of weld metal. Three welding shifts, operating continuously for nine days, were employed to fabricate one assembly.

Source of the mandrel's power is a huge hydraulic ram. Forming the central assembly, a hydraulic cylinder, 18½ inches in diameter, contains the big piston which does the work. Hydraulic fluid under 5000 psi is forced into this cylinder to bring it down. As it descends, the piston pulls a heavy shaft connected to a tapered pin at the top of the machine. This pin expands a set of eight large nickel-iron segments with aluminum alloy shoes which fit snugly around its circumference. The cylindrically-shaped jet engine components are placed over these shoes where the radial force of 4800 tons is available to stretch them into size and shape.

Forerunner of the 4800-ton model is installed conventionally with most of its bulk below floor level. Its 1200-ton mandrel forms wing tank sections

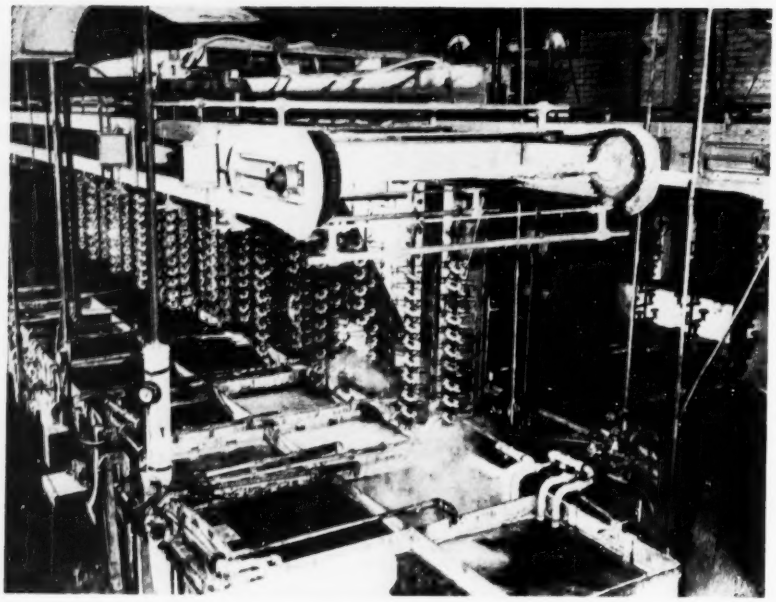
Close Tolerances—A primary requirement of the tool's use is precision. To effect this, Ryan designed the mandrel so that the movement of the main shaft would be limited by four steel collars which can be adjusted. Threaded on steel columns, these collars are raised or lowered by turning wheels which are chain-connected to the columns by integral sprockets. One revolution of the turning wheels results in a change in diameter in the mandrel shoes of 0.025 inch. Fractional adjustments of as little as 0.005 inch in diameter can be easily obtained.

With the new, more powerful machine, alloys of stainless steel as well as aluminum may be processed. Aluminum skins can be formed in the SW condition or in the SO condition and heat treated afterwards. Ryan designs the component sections slightly smaller than required so that they can be stretched out to exact dimensions.

It is interesting to note that the big mandrel has a capacity for delivering stresses that approach the effectiveness of large hydropresses which are much bulkier. The 5000 psi hydraulic oil which is fed to the mandrel has the highest operating pressure of any fluid in the plant.

Major credit for originating the forming innovation goes to R. E. Grabowsky, factory service executive. Job of designing the mandrels and tooling was handled by C. C. Hasty and H. F. Wallen.

Illustrative of the trend toward cylindrically-shaped components, tailpipe and exhaust-cone assemblies are shown in foreground, tank sections in rear



Techniques continue to look up as . . .

Platers Disclose New Coating Methods

CRACK-FREE CHROMIUM promises to open up new uses for chromium plating in finishing and engineering applications. Black chromium finishes have good adhesion and can be heated in high vacuum to 1000° F. These new developments were highlights of the chromium plating symposium held at the 40th annual convention of the American Electroplaters' Society in Philadelphia.

Other new technical advances were reported: A bright gold plating solution; a new iron plating bath; and a method for depositing adherent coatings on molybdenum for high temperature use. Corrosion studies also came in for their share of discussion. Tests indicate that steel given a thin nickel plate followed by chromium does as well in salt spray corrosion tests as steel given a heavier nickel plate with chromium. But results do not carry over to outside exposure performance.

Cracks Go — A new chromium plating bath for impervious, crack-free electrodeposits was described by R. Dow, United Chromium Inc., Detroit. The bath is basically of the "SRHS" type and is operated at 140° F or higher. Controlling factor: Type and concentration of catalysts used in the chromic acid solution.

The new plate can be heated at 1000° F for 1 hour without encountering cracking. Cracks show up in ordinary chromium plate at 300° F. This suggests superior performance of crack free chromium in uses where high temperatures are involved.

Corrosion resistance was tested by plating mild steel panels to 0.0003-inch with the new type chromium plate followed by exposure in a 20 per cent salt spray cabinet. Panels plated with ordinary chromium failed severely in 24 hours. Crack free chromium lasted 175 hours before corrosion. Mr. Dow estimates that the crack free chromium lasted more than seven times longer than the time for complete failure of the regular panels.

Coming in STEEL

Watch for a special technical report on What To Plate, coming in the July 20 issue of STEEL!

Outside Exposure—Plated panels were exposed to atmospheric corrosion for 18 months to compare ordinary chromium with crack-free chromium plate. Test panels plated with 0.001-inch copper followed by 0.00005-inch of chromium showed 60 rust spots in the case of ordinary chromium and one rust spot for crack free chromium. Panels having 0.001-inch of nickel followed with 0.00005-inch of chromium showed eight rust spots for ordinary chromium and one rust spot for crack free chromium. Test pieces plated with 0.0005-inch copper, 0.0005-inch nickel, followed with 0.00005-inch of chromium showed 12 times as many rust spots for ordinary chromium plate as for crack free chromium.

Another interesting point: Crack-free chromium is not as hard as regular chromium plate. This allows buffing to a high luster. Actual hardness values based on plates produced in a 70-gallon bath in United Chromium laboratories are as follows:

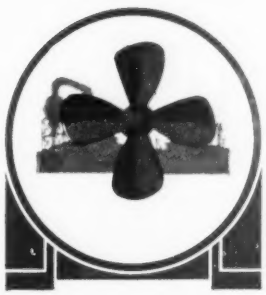
	Diamond Pyramid Hardness
Ordinary Chromium	750-900
SRHS type	850-1025
Crack-Free	425-700

Black And Stable—Need for a black coating stable at high temperatures for use in heat regulating applications was the reason back of research conducted at Westinghouse Electric Corp. to develop a black chromium plating bath. The black plate gives an element more sensitive to temperature changes. It also resists corrosion at high temperatures.

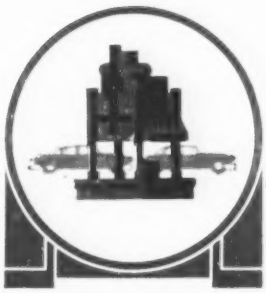
One bath described by Martin F. Quaely of Westinghouse, who reported on the work, consists of 200 g/l of chromic acid, 20 g/l of nickel chloride crystals, 2 g/l of vanadium (dissolved in nitric acid), and 6 cc/l of acetic acid. The bath is operated at a temperature of 85 to 95° F with current density of 1000 amp per sq ft. A second bath stated to give good results is made up of 200 g/l of chromic acid, 20 g/l of ammonium vanadate (NH_4VO_3), 6.5 cc/l of acetic acid. The same current density as above is used with this

(Continued on p. 126)

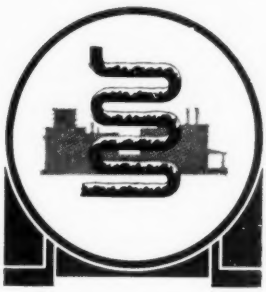
Pumping



Ventilating



Metal Forming



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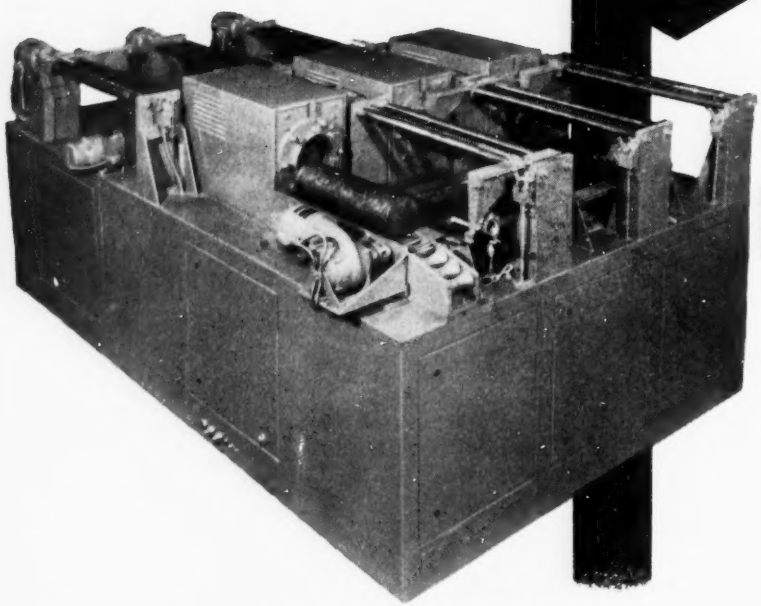
the first completely universal....

60-cycle **induction**

BILLET HEATER

THIS Loftus Universal Thermo-Induction furnace is the most flexible 60-cycle billet heater ever designed. You can heat every non-ferrous metal, in the same furnace, either consecutively or simultaneously, to its respective forging or extrusion temperature. The unit maintains high efficiency, constantly, even when heating **short-length** billets.

Loftus Thermo-Induction gives you the most practical, dependable, and efficient method of heating non-ferrous metals. You achieve uniform heating in a matter of seconds. Production is continuous, and completely automatic. The press operator controls the furnace. Separate, positive control of each coil is at his fingertips.



The Loftus 60-cycle Thermo-Induction Heater illustrated is designed to heat copper, brass, aluminum, and cupro-nickel for extrusion purposes. The unit is readily adaptable for forging and rolling processes. It is possible, with this billet heater to heat a 5" dia. Aluminum billet to 800° F., an 8" dia. brass billet to 1550° F., and a 10" dia. cupro-nickel billet to 1950° ALL AT THE SAME TIME, IN THE ONE FURNACE. Each billet is heated independently . . . from a single control panel.

Send Today for Booklet describing Loftus 60 Cycle Induction Heating in Detail

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Designers and Builders of Industrial Furnaces

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NEW PRODUCTS and equipment

Reply card on page 121 will bring you more information on any new products and equipment in this issue

Straightening Press

. . . shops do their own work

This press is designed to permit any shop to do its own work in straightening long shafts, bars, work pieces or machinery parts. One effect is to save unnecessary

grinding and turning, because the cutter or grinder must remove only enough material to true up the shaft diameter and bring the surface to the desired finish.

Pressure on a shaft is exerted at one or more points along its length until dial indicator mounted on the frame shows identical reading at each point. V blocks can be moved along the bed, as can the hydraulic pump. Resulting straightening range reaches from one to ten-foot shafts. Lempco Products Inc., Dept. ST, Bedford, O.

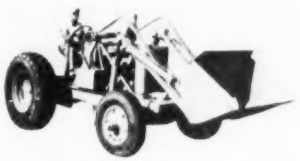
FOR MORE DATA—CIRCLE REPLY CARD NO. 1

Diesel-Powered End Loader

. . . capacity to 5000 pounds

Combination of diesel power with front-end loading up to 5000-pounds capacity is featured on this Shoveloader model. Sheppard industrial tractor-mount offers low replacement-parts cost, is built with eight-speed transmission that permits full throttle operation at each job speed. The tractor is designed for use in critical conditions of mud, water and uneven ground.

Shoveloader model will crowd and dig below tractor level, lift its top capacity load to 10 feet, 3



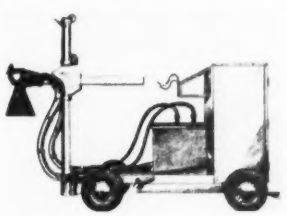
inches, dump it at 8 feet, 6 inches and reach 5 feet, 10 inches ahead of the tractor radiator shield. Baker-Lull Corp., Dept. ST, 314 W. 90th St., Minneapolis 20, Minn.

FOR MORE DATA—CIRCLE REPLY CARD NO. 2

Mobile X-Ray Unit

. . . radiographs unwieldy items

Model 413, an improved 250-kv mobile x-ray unit, is developed for radiographing unwieldy objects that require positive x-ray inspection. Improvements are principally in areas of flexibility and ease of handling. The operator gets additional protection so he can stand inside the cab. Radius of turn is



improved so the unit can be positioned more easily.

Wide inspection coverage is accomplished with a long vertical column and horizontal tubearm. A 250-kv constant potential transformer provides power for radiographing up to 4½ inches of steel and proportionally thicker sections of lighter-density materials. Westinghouse Electric Corp., Section XST, 2519 Wilkens Ave., Baltimore 3, Md.

FOR MORE DATA—CIRCLE REPLY CARD NO. 3

Improved Hydraulic Hack Saw

. . . larger lift on relief stroke

Larger hydraulic pump, improved feed piston and piston ring design are changes designed to refine performance of this vertical hydraulic hack saw. Feed pressure is applied smoothly and accurately from redesigned hydraulic system.

Saw blade operates vertically with improved larger lift on relief stroke.

Steady coolant flow is applied from the top, washing chips quickly into the chip tray to permit clean, fast saw blade action. Machine has all slide bearings lined with hardened and ground removable type inserts. Peerless Machine Co., Dept. ST, 1600 Junction Ave., Racine, Wis.

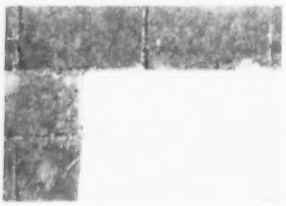
FOR MORE DATA—CIRCLE REPLY CARD NO. 4

Oil-Base Paint

. . . waterproofs masonry surfaces

This oil-base paint resists moisture on interior and exterior masonry surfaces to provide a one-application waterproofing product. It

contains a grit-like volcanic ash filler that closes small pores and stops capillary action. Manufacturer reports its Damp-Seal water-



proofs without peeling, chipping, blistering or cracking. It is equally effective on interior or exterior surfaces, above or below grade, as a sealer or filler.

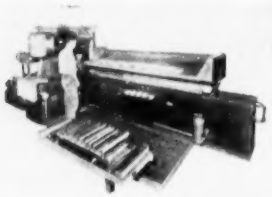
Product is available in seven colors, requires no sizing and can be applied wet or dry over unpainted or painted surfaces. It can be applied by brush or spray. Monroe Co. Inc., Dept. ST, 10703 Quebec Ave., Cleveland 6, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 5

Hydraulic Surface Grinders

. . . straight and concave bevels

Line of hydraulic knife grinders is designed to grind straight and concave bevels of any desired angle or straight flat surfaces within the machine capacity. It is specially adapted for finishing or regrinding bevels and is therefore particularly recommended for sharpening high alloy machine knives. Model's wheel



head is arranged to tilt from the vertical position. Therefore, plane of grinding wheel is at an angle to the work being bevelled as outside rim of the grinding segments is brought into contact with knife being ground.

Hydraulic cross feed is provided for the vertical wheel head at instantly variable speeds as the 18-inch diameter segmental grinding wheel travels across the work horizontally. This feed permits the wheel to feed into and across the work without actually moving the head down. Hill Acme Co., Dept. ST, 1201 W. 65th St., Cleveland 2, Ohio.

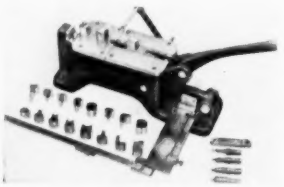
FOR MORE DATA—CIRCLE REPLY CARD NO. 6

Steel Rule Diemaker

. . . joins four jobs in one

Cramaco diemaker is a combination of four machines, a complete outfit including bending tools. It is designed to fill completely the diemaker's needs for making steel rule dies. The machine combines into a single unit steel rule bending, cutting, notching and vertical circular rule cutting.

Combining these operations should save considerable time usu-



ally spent by the operator in moving from one machine to another to complete the operation. Craftsmen Machinery Co., Dept. ST, 575-577 Atlantic Ave., Boston, Mass.

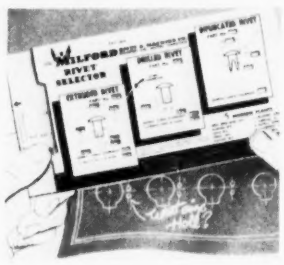
FOR MORE DATA—CIRCLE REPLY CARD NO. 7

Slide Chart Calculator

. . . rapid fastener selection

This slide chart calculator enables manufacturers to select the right fastener for each job quickly and easily. The selector is 8½ inches wide, 5½ inches high, lithographed on heavy cardboard. Is available free from the manufacturer.

Tabulated information is given for extruded and drilled tubular rivets, split rivets and cutlery riv-



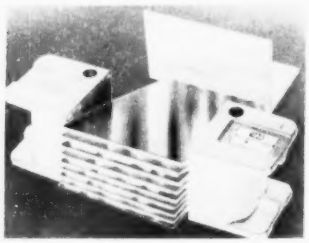
ets. Data include part catalog numbers, principal and critical dimensions, plus information on normal clinch allowances and clearance holes in work. Milford Rivet & Machine Co., Dept. ST, Milford, Conn.

FOR MORE DATA—CIRCLE REPLY CARD NO. 8

Magnetic Sheet Separator

. . . simplified, safer handling

Need for separation of blanks, particularly for press operation, is filled by this magnetic floater. By



placing sheets in the magnetic field, stacked sheets are temporarily magnetized so they repel each other, breaking oil film or vacuum. In addition to simplified handling, another result is elimination of double sheet feeding.

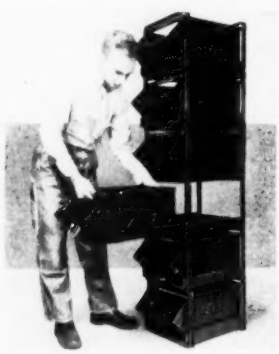
Floaters are mounted in die cast housings for easy mounting, singly or in multiples, depending on size of sheets involved. Magnets operate without wiring. Material Handling Equipment Co., Dept. ST, 141 E. 44th St., New York 17, N. Y.

FOR MORE DATA—CIRCLE REPLY CARD NO. 9

Roller-Bearing Slide Rack

. . . any size, shape, capacity

Addition of roller bearing slides to the manufacturer's stack rack line permits even heaviest boxes or



bins to slide as easily as drawers in a file. Slide Racks lock together without tools to form storage units of any size, shape or ca-

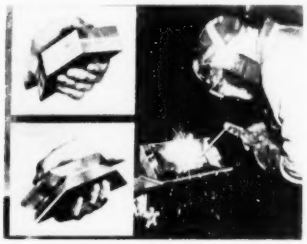
pacity. Stops prevent roller bearing slides from being pulled out more than halfway, so loaded boxes cannot fall or spill contents. Stackbin Corp., Dept. ST, 1123 Main St., Pawtucket, R. I.

FOR MORE DATA—CIRCLE REPLY CARD NO. 10

Magnetic Welding Clamps

. . . locate and hold metal pieces

These magnetic clamps are useful for locating and holding pieces of metal together for tacking and welding. Three basic models are



available. First is used to hold flats to flats; second, rounds to rounds or flats to flats; the third holds light sheet metal at any angle.

Two other models can be used for holding and lifting heavy plate. Magnetic cores are made of Alcomax. Aronson Machine Co., Dept. ST, Arcade, N. Y.

FOR MORE DATA—CIRCLE REPLY CARD NO. 11

Aluminum Belt Conveyor

. . . belt adjustment improved

Increased load capacity and improved belt pitch adjustment are features of the redesigned model LS aluminum belt conveyor. This lightweight unit becomes more convenient in use and adaptable to a wider range of power boosting, stacking and loading jobs. Load rating of some models is stepped up by using a ½-hp motor to power the belt. A ¾-hp unit is also available.

The conveyor is made in 10 and 16-inch widths and in five lengths from 11 to 21 feet. Each model is balanced on free-rolling running gear so one man can move it easily. Built-in jackscrew raises and lowers the drive end. Rapids-Standard Co. Inc., Dept. ST, Grand Rapids 2, Mich.

FOR MORE DATA—CIRCLE REPLY CARD NO. 12

Indicating Millivoltmeter

. . . single-point, double range

A single-point, double-range indicating millivoltmeter pyrometer is designed to incorporate plug-in galvanometer. The dual temperature indicator gains stability; is relatively free from effects of vibration and temperature and more easily serviced than earlier units.

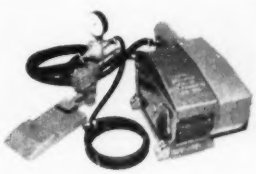
Two range combinations are available: 0 to 2400 and 0 to 3000° F; 0 to 2000 and 0 to 3000° F. Other combinations are available on special order. Minneapolis-Honeywell Regulator Co., Industrial Division, Dept. ST, Wayne & Windrim Sts., Philadelphia 44, Pa.

FOR MORE DATA—CIRCLE REPLY CARD NO. 13

Air-Operated Tape Dispenser

. . . lengths are predetermined

Tape is delivered by foot-lever operation in predetermined lengths by this air-automatic pressure sensitive tape dispenser. Result is reduced dispensing time and elimination of tape waste. The air valve



can be regulated to control dispensing power for varying requirements of different tapes.

The model can be connected to any standard air line. Derby Sealers Inc., Dept ST, Derby, Conn.

FOR MORE DATA—CIRCLE REPLY CARD NO. 14

Portable Spot-Gun Welder

. . . unlimited on-the-spot jobs

This portable welder does all types of on-the-spot jobs not usually possible with stationary units. Its extreme portability—it weighs 25 pounds—is coupled with simplicity of operation. There are only two movements required: Squeezing the toggle grip to obtain high forging pressure at tips; simple depression of trigger switch to produce spot-weld in a fraction of a second.

Toggle grip provides excellent balance for manipulating the gun with three point suspension. Unit welds maximum combined thickness of 0.16-inch with the short arms. No condenser is required. A further feature is glass insulation protection for the operator.

Nine assorted copper extension arms and two clamps permit welding at many different angles. C. F. Carpenter, Dept. ST, Box 87, Allentown, Pa.

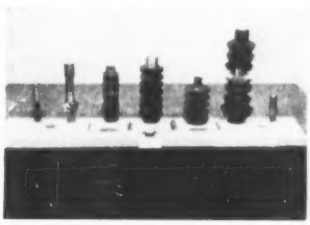
FOR MORE DATA—CIRCLE REPLY CARD NO. 15

Simplified Carburizing

. . . cuts plating, machining

A product called De-ox-tix is a development designed to simplify selective carburizing. The process is reported to provide an easy way to eliminate copper plating and machining which generally precede selective parts carburizing.

The product is solid and remains solid throughout the complete process. It can be supplied in almost any size or shape and its potency is tailored to suit a specific



job. It is being applied successfully to parts that require selective hardening of either inside or outside diameters. Walmil Co., Dept. ST, 23906 Woodward Ave., Pleasant Ridge, Mich.

FOR MORE DATA—CIRCLE REPLY CARD NO. 16

Fluxed Anchor Stud

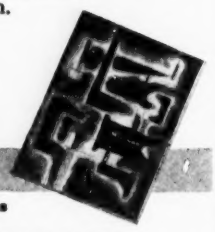
. . . anchors structural members

Special fluxed anchor stud is introduced for anchoring structural members in concrete or masonry. Tensile strength of the studs is 75,000 to 85,000 psi. These ½-

DON'T KILL YOUR CHANCES for lower assembly costs!!

Before you tie up funds in costly tools and dies, have Milford fastener-engineers analyze your product assembly need . . . at the design stage, while plans are still flexible. It will save you money and headaches, reduce production expense, speed up assembly time, and aid you in making a better product . . . perhaps at a competitive price advantage! You can put these savings in your pocket by sending drawings and detailed description of your product fastening problem for Milford's scientific solution.

Write for your copy of the "Milford Method for solving industry's fastening problems".



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the name to rivet in your memory for fasteners

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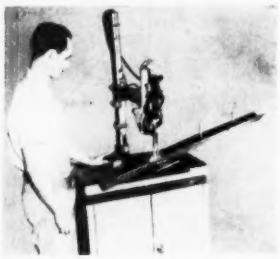
880 Illinois Ave., Aurora, Ill.
1160 W. River St., Elyria, Ohio
80 Platt Street, Hatboro, Penna.
757 So. Palm Ave., Alhambra, Calif

NEW PRODUCTS and equipment

inch diameter units can be installed rapidly with the manufacturer's semiautomatic welding gun, operating effectively in the angle or on the faces of trench frames,



column guards, joists and any other shape.

Accurate positioning is maintained by special fixtures and distortion completely eliminated. Nelson Stud Welding Division, Gregory Industries Inc., Dept. ST, Lorain, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 17

Water-Cooled Torch

. . . continuous work at 500 amp

Continuous heavy-duty inert gas arc welding at 500 amp is possible with this water-cooled Heliarc HW-12 torch. Currents of all types can be used to weld almost all commercial metals. The torch also can be used for hard-facing operations.

Cooling water flows into the torch body and around the water jacket housing the gas cup. Return flow leaves the torch body through a plastic housing power cable. All external plumbing is eliminated to prevent leakage from accidental damage and permits more maneuverability. A quarter-turn of torch cap releases electrode for replacement, without

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70. Engineering Facilities

Kaiser Engineers 32-page illustrated bulletin tells story of the constructional design and engineering facilities of this Kaiser division. You are introduced to many highly qualified men, shown projects they have engineered and told what they are qualified to undertake.

71. Tap Manual

Threadwell Tap & Die Co.—Latest information on tapping and Unified and American screw threads is contained in 56-page pocket-size "Tap Manual." Tabulated dimensions, sizes, tolerances and flute information are among the data featured. Manual is useful in proper selection and use of all makes of taps.

72. Coolant Lubricant

Michigan Tool Co., Shear-Speed Chemical Products Div.—Shear-speed water-soluble cutting oil is described in 4-page illustrated bulletin SS-SO53. Compound is useful for a wide range of speeds, feeds and materials and many metalworking machines. Bulletin provides quick-check features listing, and includes use instructions.

73. Laminated Shims

Laminated Shim Co.—"Selection and Applications of Laminated Shims for Bearings" is title of 8-page illustrated reprint of two technical articles. Text and drawings show how to design for laminated shims, and how they can save time in assembly operations.

74. Analysis Methods

Fisher Scientific Co.—Literature describes analysis methods using the Fisher Nefluoro-Photometer for determination of the percentage of iron in aluminum alloy, of copper in aluminum alloy, of acid-soluble aluminum in steel and nephelometric method for determining sulphates in water. This instrument measures concentration in three ways: photometrically (light transmitted), fluorometrically (light emitted), and nephelometrically (light scattered).

75. Shock Insulation

Fabrecka Products Co.—General properties of Fabrecka, a resilient material for reducing shock, vibration and noise, are outlined in a 36-page illustrated booklet. Wide variety of machinery and transportation applications are described, and much technical data included.

76. Shell Molding Process

Solar Aircraft Co.—Facilities of company's foundry for producing stainless alloy castings by the shell molding process are described and illustrated in booklet PR-252. Castings from 1 oz to 350 lb can be produced from many difficult alloys, including 300 and 400 series stainless steels, N-155, Inconel and Hastelloy C.

77. Laboratory Supplies

Arthur S. LaPine & Co.—8-page illustrated "Lanco Apparatus News" contains details of laboratory equipment ranging from convection ovens and circulating systems to glassware, resistance heating tape, thermometers and refractometers. Full specifications and ordering info are given for all items.

78. Double-End Press

Clearing Machine Corp.—How one press does the work of two and cuts costs seven ways is told in 4-page illustrated bulletin 219 on the double-end horizontal press. It requires no foundation pit, limited space and a comparatively small o. e. investment.

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79. Hydraulic Bulldozers

Lake Erie Engineering Co.—For heavy-duty bending and forming operations, 50 through 500-ton capacity hydraulic bulldozers are pictured in various operations in 8-page illustrated bulletin. These series HW horizontal machines are flexible, quickly set-up and use uncomplicated dies.

80. Handling Attachments

Elwell-Parker Electric Co.—Over 20 attachments for Elwell-Parker gasoline and electric industrial trucks are illustrated and briefly described in 4-page brochure. They fit crane, fork and ram, low lift and high lift trucks.

81. Reamer Selector

Lavallee & Ide, Inc.—143 hole sizes from 0.4000 through 0.5010-in. which can be reamed with standard L & I reamers are listed on pocket-size reamer selector. Included are catalog numbers and equivalent sizes for easy ordering.

82. Crane Cab Coolers

Dravo Corp.—If your crane cabs are hot and dirty this summer, or any summer, you should look into the crane cab coolers and conditioners detailed in illustrated 24-page bulletin 1301. Specs are given for each model.

83. Cone-Drive Gearing

Michigan Tool Co., Cone-Drive Div.—"Cone-Drive Gearing at Work in Machine Tools" is title of 8-page illustrated bulletin 632. This explains the Cone-Drive full-depth contact gearing system. Theory, practice, manufacture and applications are fully covered and illustrated. System provides both transmission strength and smoothness.

84. Grinding Wheels

Cincinnati Milling Machine Co.—24-page booklet "A New Concept in Grinding Wheels" is an insight into the company research program for development of better wheels. It shows how manufacturing processes are quality controlled. Illustrated, it contains interesting and unique photomicrographs.

85. Dieing Machines

Emhart Mfg. Co., Henry & Wright Div.—In 60 fully illustrated pages, catalog No. 53 covers the complete line of Henry & Wright dieing machines, which range in capacity from 25 to 400 tons. These machines represent the latest models and highest operating speeds for every stamping and punching operation from simple blanking to multiple station progressive dieing. Accessories are also fully treated.

86. Fork Lift Truck

Clark Equipment Co., Industrial Truck Div.—Design features, mechanical and operational specifications and height and capacity data tables are found in two 4-page illustrated bulletins on Utilitruc fork lift trucks. Electric model has 6000-lb capacity at 24 in., while gas-powered model can lift 7000 lb at 24 in.

EDITORIAL ARTICLES
Available In Limited Quantities

87. Strip Mill with Extras

Most new rolling capacity just about fills a production gap. Not so at Armco Steel's Ashland, Ky., division. They planned ahead of today's demands with their new 80-in. hot strip line. The story is in STEEL article "Strip Mill with Designed-In Extras."

88. Spin Testing

Spin testing or rotation of parts at high speeds, which began as a design aid, is being used more and more by industry. One application is stretch spinning before final machining. In STEEL article "Production Testing Goes for a Spin" G. W. Ehrsam, Jr. describes this and other applications of this production testing technique.

89. Central Hydraulic Supply

Centralized supply of hydraulic power for machine tools offers an opportunity for reduced cost and simplified maintenance of machine installations. It's another avenue for economy. Read STEEL article "Central Hydraulic Supply" which describes such installations at Heald Machine Co.

90. High Speed Fastening

"Quantity Up, Quality Too" is title of STEEL article which relates how Carrier Corp. increased its production with a new assembly layout and greater use of high speed fasteners. Assembly methods used formerly did not produce the volume desired. Maintaining reputed quality was accomplished as well.

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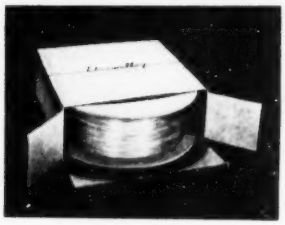
need for wrenches. Linde Air Products Co., division of Union Carbide & Carbon Corp., Dept. ST, 30 E. 42nd St., New York 17, N. Y.

FOR MORE DATA—CIRCLE REPLY CARD NO. 18

Inert Arc Spooled Wire

. . . easy to stock and handle

Spooled wire of inert arc welding is precision-wound on labeled spools to simplify identification, stocking and handling for distributors and users. Spooled wire



0.035 to 3/32-inch diameters in all stainless steel grades is made to the several special chemical analyses required.

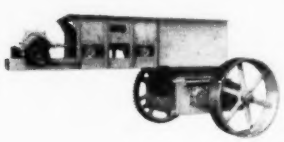
Each spool contains about 25 pounds of wire and consists of an extra heavy expendable plywood spool backed in reinforced carton. Drawalloy Corp., Dept. ST, York, Pa.

FOR MORE DATA—CIRCLE REPLY CARD NO. 19

Reciprocating Plate Feeder

. . . capacity: 500 tons per hour

Model HDF feeder has capacity to 500 tons per hour, is recom-



mended for feeding all material sizes. It employs the bottom-feed

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Abrasive Belts

for grinding, sanding, polishing — metal, wood, leather, plastics, rubber.

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principle, with capacity governed by speed and stroke of reciprocating bottom plate. Readily adapted to any kind of hopper or crusher, it handles materials from trucks, cars, hoppers, storage bins, etc. Rate of flow can be controlled to synchronize with producing capacity of any machine, elevator or conveyor.

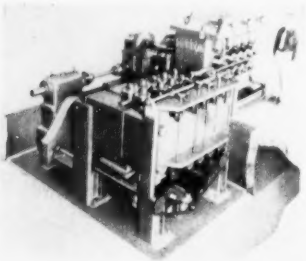
Power is delivered from the electric motor through V-belts to Dodge torque arm reduction unit mounted on eccentric shaft. McLanahan & Stone Corp., Dept. ST, Hollidaysburg, Pa.

FOR MORE DATA—CIRCLE REPLY CARD NO. 20

Two-Plane Straightener

. . . high output on flats, shapes

Steel and nonferrous flats and shapes can be straightened at production speeds from 100 to 1000 fpm by this two-plane machine. To



obtain its high speed plus durability and operating ease, the unit has large roll shafts on close centers. Both the vertical and horizontal straightening units are adjustable by pushbutton control of motor-driven screws. Sutton Engineering Co., Dept. ST, Bellefonte, Pa.

FOR MORE DATA—CIRCLE REPLY CARD NO. 21

Chemical-Resisting Coatings

. . . single coats to 20 mils

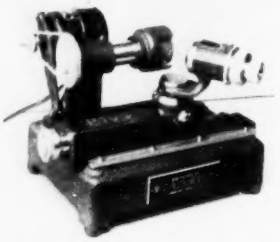
Formulations that can be spray-applied to produce extra-thick coatings on steel and other metals protect equipment against acids, alkalies, salts and oxidizing agents. Unichrome 5300, used at room temperature, can be applied to cold vertical surfaces in single coat dry films up to 20 mils thick. Coatings are usually applied over a special primer. Both primer and the coating require short bakes at a temperature of 350° F. United Chromium Inc., Dept. ST, 100 East 42nd St., New York 17, N. Y.

FOR MORE DATA—CIRCLE REPLY CARD NO. 22

Portable Grinding Machine

. . . sharpens special end mills

In addition to its primary function of grinding all types of engraving cutters, this cutter grinder can be used to grind and sharpen special end mills, countersinks, counterbores and lathe tool bits.



Rotatable spindle of the grinding head accommodates conventional spring collets up to ⅜-inch capacity, as well as adapters for cutters of unique design. Mico Instrument Co., Dept. ST, 80 Trowbridge St., Cambridge, Mass.

FOR MORE DATA—CIRCLE REPLY CARD NO. 23

Low-Toxicity Safety Solvent

. . . contains no carbon tet

Low-toxicity Tecsolv No. 383 a noninflammable, fast evaporating safety solvent. Manufacturer reports the solvent can be used with vapor concentrations in the air 10 to 20 times those permissible with tetrachloride. It is a clear, colorless liquid with a pleasant odor, but contains no carbon tetrachloride. Tect Inc., Dept. ST, Cortlandt & Erie Sts., Dumont, N. J.

FOR MORE DATA—CIRCLE REPLY CARD NO. 24

Subminiature Capacitors

. . . with silicone end seals

Two lines of subminiature metal-clad capacitors are available with silicone end seals which provide maximum resistance to thermal and physical shocks and permit soldering up to the bushing without danger of seal damage. The dielectric units are for operation from −55 C to 125 C without derating. The other line of capacitors has a liquid dielectric for operation from −55 C to 85 C without derating. General Electric Co., Dept. ST, Hudson Falls, N. Y.

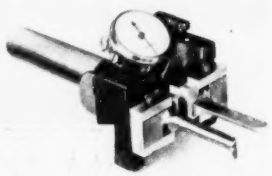
FOR MORE DATA—CIRCLE REPLY CARD NO. 25

Portable Groove Gage

. . . checks diameter, roundness

Diameter and roundness of internal grooves in a range of diameters up to 5 inches and depths of 1 or 2 inches from face can be checked by this portable adjustable groove gage. Actual checking is done by a pair of segments mounted on platforms, one of which is movable. A thumb lever collapses the movable spring-loaded segment so the gaging members can enter the work.

Release of lever permits the segment caps to expend into the



groove. Movable segment actuates a precision dial indicator that shows variation from basis size. Bryan Chucking Grinder Co., Dept. ST, Springfield, Vt.

FOR MORE DATA—CIRCLE REPLY CARD NO. 26

Solid Adjustable Taps

. . . one-operation tap, chamfer

Special solid adjustable taps are provided for tapping and chamfering standard pipe and drainage fittings in one operation. They're available in seven sizes, for pipe ranging from 1¼ to 4 inches. Outstanding feature is incorporation of chamfering blades in the tap body with resulting savings of time, handling and investment due to elimination of separate chamfering operation.

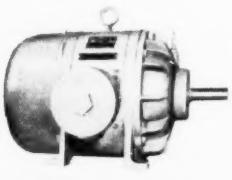
Use of removable tap chasers and chamfering blades, which can be easily and economically replaced after repeated regrinding, also lowers tool costs and inventories. Landis Machine Co., Dept. ST, Waynesboro, Pa.

FOR MORE DATA—CIRCLE REPLY CARD NO. 27

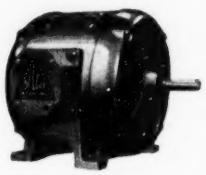
DEPENDABILITY...

that minimizes costs

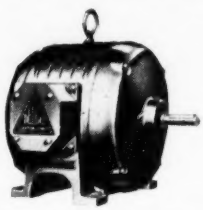
Delco Motors



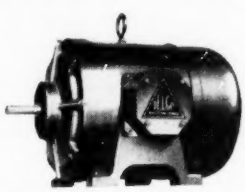
Explosion-proof motor



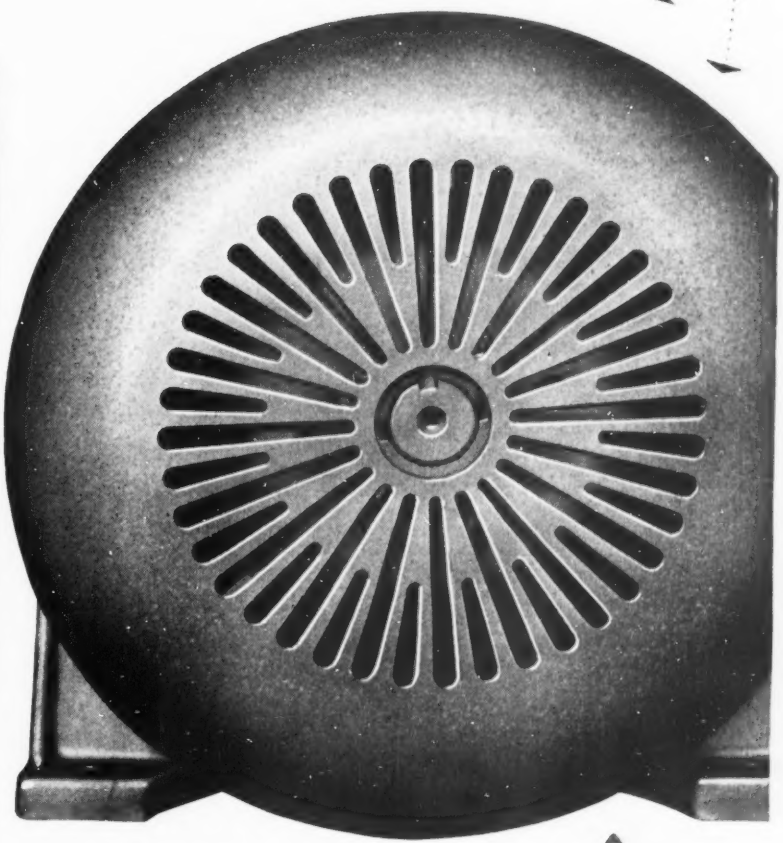
Open ball-bearing motor



Totally enclosed ball-bearing motor



Totally enclosed fan-cooled motor



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(Continued from p. 124)

bath in a temperature range of 95 to 122° F.

The black deposit can be applied to a variety of base materials including nickel-chromium type stainless steels. Abrasion resistance of the dense black coating is high; it provides oxidation protection at 1000° F.

Boosts Recovery — Recovery of chromic acid and removal of impurities from chromium plating solutions are now more efficient with a new cation exchange resin, designated Permutit S. The new resin is stable in 40 per cent chromic acid solutions according to C. F. Paulson, Permutit Co., New York, who gave details of plating solution recovery systems using the ion exchange system. Earlier resins used in this application were unstable above 10 per cent chromic acid.

On The Increase—Gold plating is on the increase, according to Edwin C. Rinker, Sel-Rex Precious Metals Inc., Belleville, N. J., who described a new gold plating bath that produces a bright, hard tarnish resistant deposit with good electrical properties. Vickers hardness of the new deposit is 116 as compared with 65 for regular deposits. For this reason, it shows advantage in sliding contacts.

The bath recommended contains 12 ounces per gallon of potassium cyanide, 1 ounce per gallon of gold and 1 to 2 ounces per gallon of an inorganic complex which controls character of the deposit. The bath is used at a temperature of 60 to 70° F. A stainless steel tank makes a good container and also serves well as the anode. Preferred current density for operation is 3 to 5 amp per sq ft. Plating rate is such that 0.001-inch gold deposit can be produced in less than 65 minutes. Tests reported showed that the wear resistance of the new bright gold deposit is about 40 times greater than that of conventional gold electroplates.

Iron Plating — Iron is usually plated from acid solutions. Dr. Henry B. Linford, Columbia University, described work conducted in co-operation with Dr. Walter R. Meyer, Enthone Inc., New Haven, Conn., to develop an alkaline-type iron plating solution. Secret of the process: New complexing agents—triethanolamine and ethylenediamine tetraacetic acid.

A typical iron plating bath of this new type contains about 20 g/l of iron, 155 g/l of triethanolamine and 130 g/l of the sodium salt of ethylenediamine tetraacetic acid. It is operated on the alkaline side at current density of 20 amp per sq ft at 180° F.

Watch This—Dr. Henry Brown, Udylite Corp., Detroit, told the electroplaters that chromium plate is less passive in salt spray than in atmospheric exposure. Tests in salt spray show that steel given a thin nickel plate followed by chromium does as well as steel given a heavier nickel plate followed by chromium. However, the results do not carry over to outside exposure such as encountered under use conditions. Reason is that the acidity of the moisture collecting on plated parts changes the passive characteristics of the chromium plate.

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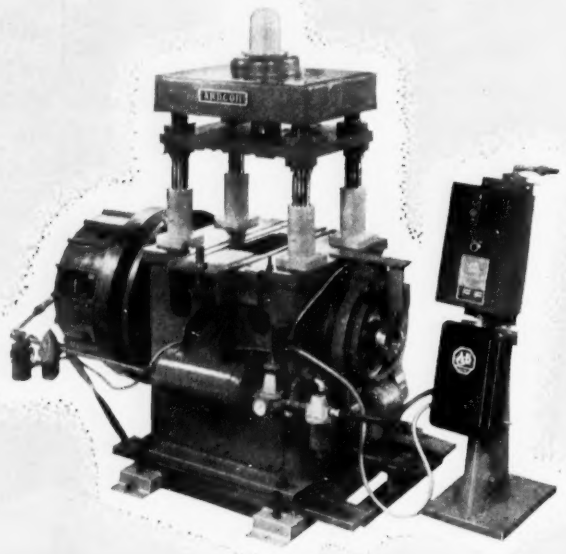

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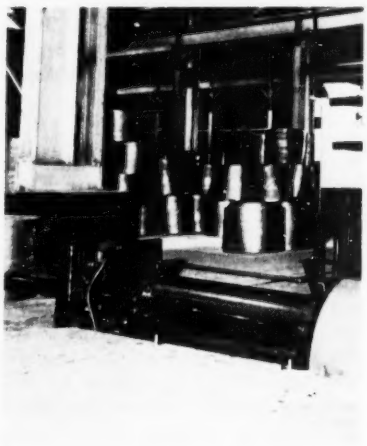
Hydraulic Handling

COIL HANDLING equipment conveyor at U. S. Steel's Sheet & Tin Mill, Gary, Ind., illustrates the growing role that fluid power is playing in the movement of heavy materials.

Large, heavy coils of sheet steel are pushed, tilted, lifted and pulled down a conveyor line by seven special, long-stroke Lindberg air and hydraulic cylinders for final positioning on three gravity conveyors leading to the entry end of the pickle lines. The coils range in size from a minimum 30 inches diameter by 2 feet high to 4 feet-6 inches diameter by 6 feet-2 inches high and weigh up to 25,000 pounds.

Push, Pull—Cranes lift the coils from the storage area in the raw



GROWING ROLE OF FLUID POWER
. . . delivered for final positioning

coil pickling department and position them upright on a powered conveyor leading to a turn table. Due to varying coil sizes, an operator turns the table until the coil fits snugly against the pusher head of a mill type air cylinder, with a 16-inch bore by 72-inch stroke.

This cylinder pushes the coil onto a powered conveyor that carries it to a point where a 2000 psi hydraulic cylinder with an 11-inch bore x 84-inch stroke operates in conjunction with a special tilting mechanism to tilt the coil on its side. The coil now at rest on a dolly at the end of this conveyor is lifted a few inches by a pendulum-mounted mill-type 2000 psi hydraulic cylinder.

End of the Line—Dolly is pulled down to one of three gravity conveyors feeding the entry end of the pickle lines by a 2000 psi hydraulic cylinder with an 8-inch bore x 288-inch stroke, one of the longest stroke single piece cylinders ever built. Three foot-mounted mill-type 2000 psi cylinders with 5-inch bores x 96-inch strokes push the coil off the dolly on to the desired gravity conveyor.

Air Conditioners Expand

The rapidly-expanding air conditioning industry uses about 130 pounds of steel in a 200-pound single room unit, according to information received by American Iron & Steel Institute. In centrally-located units for cooling an entire house about 500 pounds of steel is used in ducts, 250 pounds in the installation itself.

AISI says 1 million units have been sold since World War II.

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Carbon ½ Moly
½ Chrome ½ Moly
1 Chrome ½ Moly
1¼ Chrome ½ Moly
2 Chrome ½ Moly
2¼ Chrome 1 Moly
5 Chrome ½ Moly
7 Chrome ½ Moly
8 Chrome ½ Moly
8 Chrome 1 Moly
9 Chrome 1 Moly
3½ Nickel 7½ Nickel
5½ Nickel 9% Nickel

AISI Types: 304-321-347-316-309-310-405-410-430-443-446

Analyses to meet conditions where heat, corrosion, pressure and structural strength are involved.

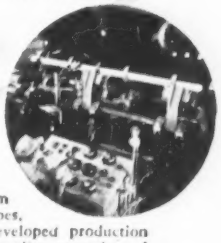
SIZE RANGE—WALL THICKNESS:

½ to 6 inches O.D. — wall thickness .035 to 1.000 inch.

TYPICAL APPLICATIONS:

Pressure tubes — Superheater tubes — Condenser tubes — Still tubes — Evaporator tubes — Barrel tubes — Oil-well Pump Barrels — Mechanical tubes — Aircraft tubes — Propeller tubes — Rollers for Transmission Chains.

The heating, piercing, rolling of seamless tubes is controlled at every step for uniformity, close tolerance.



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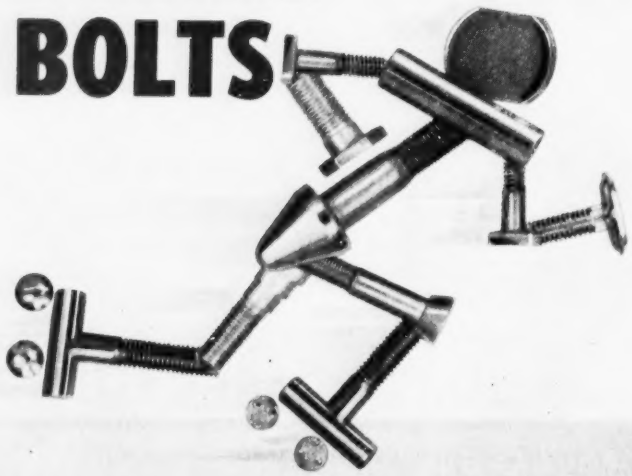

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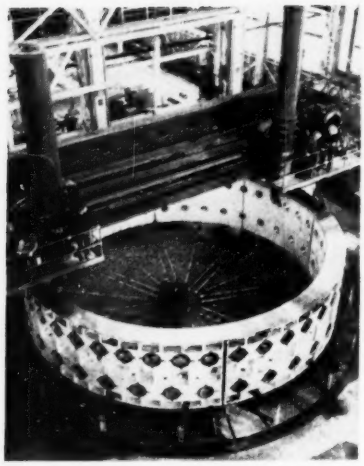

Big Wind on Order

A 40-foot vertical boring mill machines this 120-ton compressor stator section at the Westinghouse Electric Corp. Sunnyvale, Calif., plant. The plant will turn out five compressors and a 216,000-hp electric drive for the Air Force's wind tunnel at Tullahoma, Tenn. Holes in the ring are to be sockets for variable-pitch blades

Welding Award Program Set

A $13,500 arc welding award program for selected business and service establishments is announced by the James F. Lincoln Arc Welding Foundation, Cleveland. Men or women engaged in any of the selected businesses may be able to earn an extra $1,000 this year by describing the use or possible use of arc welding in the maintenance, operation or services performed by the business.

Awards will be made to individuals in non-industrial businesses and service establishments such as bakeries, dairies, hospitals, hotels, food manufacturers, buildings, municipalities, cemeteries, printing plants and newspapers. The forty different types of eligible establishments cover nearly all non-industrial types of organizations.

Written descriptions of how arc welding is or can be used in the maintenance or operation of the business or service will receive awards ranging from $1,000 to $25. Total of 191 awards will be made to individuals in these businesses.

An illustrated booklet of rules for the program is available from the James F. Lincoln Arc Welding Foundation, Cleveland 17.

CALENDAR
OF MEETINGS

July 6-17, Summer Course in Product Design: Massachusetts Institute of Technology, Cambridge 39, Mass. Information: Director of Summer Session, Room 3-107, MIT.

July 23-24, Truck-Trailer Manufacturers Association Inc.: Annual summer meeting, Edgewater Beach hotel, Chicago. Association address: 1024 National Press Bldg., Washington. Managing director: John B. Hulse.

August 17-19, Society of Automotive Engineers: International West Coast meeting, Georgia hotel, Vancouver, B. C. Society address: 29 W. 39th St., New York 18. Secretary: John A. C. Warner.

August 19-21, Institute of Radio Engineers: Western electronic trade show and convention, Civic auditorium, San Francisco. Business office: 1355 Market St., San Francisco 3. Business manager: Heckert Parker.

August 23-26, National Automatic Merchandising Association: Annual convention and exhibit, Hotel Conrad Hilton, Chicago. Association address: 7 S. Dearborn, Chicago. Secretary: C. S. Darling.

September 1-4, American Institute of Electrical Engineers: Pacific general meeting, Hotel Vancouver, Vancouver, B. C. Institute address: 33 W. 39th St., New York 18. Secretary: H. H. Henline.

September 6-11, American Chemical Society: Fall meeting, Hotel Conrad Hilton, Chicago. Society address: 1155—16th St., NW, Washington 6. Assistant secretary: R. M. Warren.

September 10-12, Rocky Mountain Management Club: Rocky Mountain industrial exposition, University of Denver arena. Club address: 1031 15th St., Denver 2. Executive secretary-treasurer: Harold S. Craig.

September 13-16, Electrochemical Society Inc.: Fall meeting, Ocean Terrace hotel, Wrightsville Beach, N. Carolina. Society address: 235 W. 102nd St., New York 25. Secretary: Dr. Henry B. Linford.

September 14-16, Allied Railway Supply Association: Annual meeting, Hotel Sherman, Chicago. Association address: 1200 W. Chase Ave., Chicago 26. Secretary: Charles F. Weil.

September 20-23, Packaging Machinery Manufacturers Institute: Annual meeting, Skytop Lodge, Skytop, Pa. Institute address: 342 Madison Ave., New York 17. Secretary-treasurer: Helen L. Stratton.

September 20-23, American Institute of Wholesale Plumbing & Heating Supply Associations Inc.: Annual convention, Hotel Waldorf-Astoria, New York. Institute address: 402 Albee Bldg., Washington. Executive secretary: George T. Underwood.

September 21-22, Steel Founders' Society of America: Fall meeting, The Homestead, Hot Springs, Va. Society address: 920 Midland Bldg., Cleveland. Secretary: F. Kermit Donaldson.

September 21-23, Truck Body & Equipment Association Inc.: Annual meeting, Sheraton-Gibson hotel, Cincinnati. Association address: 1122 DuPont Circle Bldg., Washington 6. Executive manager: Arthur J. Nuesse.

September 21-24, American Mining Congress: Annual metal and nonmetallic mineral mining convention, Olympic hotel, Seattle. Congress address: 1102 Ring Bldg., Washington 6. Executive vice president: Julian D. Conover.

September 21-25, Instrument Society of America: National instrument conference and exhibit, Hotel Sherman, Chicago. Society address: 1319 Allegheny Ave., Pittsburgh. Manager: P. V. Jones Jr.

September 28-30, Association of Iron & Steel Engineers: Annual meeting, Hotel William Penn, Pittsburgh. Association address: 1010 Empire Bldg., Pittsburgh. Managing director: T. J. Ess.

September 28-October 3, Society of Automotive Engineers: National aeronautics meeting, aircraft engineering display and aircraft production forum, Hotel Statler, Los Angeles. Society address: 29 W. 39th St., New York 18. Secretary: John A. C. Warner.

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LEADERS IN IRON AND STEEL SCRAP SINCE 1889

Berman

The Market Outlook

WHEN the sun goes down this week on the first half of 1953 it will leave in its shadows a new record for steel production in this country.

The new record will be 58 million net tons of steel for ingots and castings. Never before has that much steel been made in a first half or second half of a year. The nearest that figure has been approached was in the record-breaking steel production year of 1951 when output in the first half was 52.3 million tons and output in the last half was 52.9 million tons.

RECORDMAKERS— There are two reasons for the new record in the first half of 1953: Steel capacity has increased. Steel demand is strong.

Steel capacity in 1952 had increased over that of 1951 but the mid-year strike of steelworkers in 1952 prevented the setting of production records that year.

Production at the rate prevailing in the first half of 1953 would yield an annual total of 116 million net tons. That is only slightly below the industry's capacity at the beginning of this year—117.5 million tons. Capacity this year is supposed to reach 120 million tons.

FOR HOW LONG?— Whether steel production will continue at capacity rates throughout all of the second half of this year is a matter of much conjecture. Early this year, some observers thought steel demand certainly would drop off by July 1. As the year moved along they moved the drop-off date to the start of the fourth quarter.

URGENCY EVAPORATES— Demand for some steel products remains strong, but the intense pressure from consumers has evaporated. And steel buyers may even start showing an air of independence. Two incentives for acquiring maximum tonnage as quickly as possible—fear of a steel strike and higher prices—no longer constitute influences. Demand now is strictly a matter of need. And how would this demand be affected by ending of the Korean war? That's a question in many minds. Defense expenditures may continue on a plateau, but what psychological effect would war's end have on civilian business?

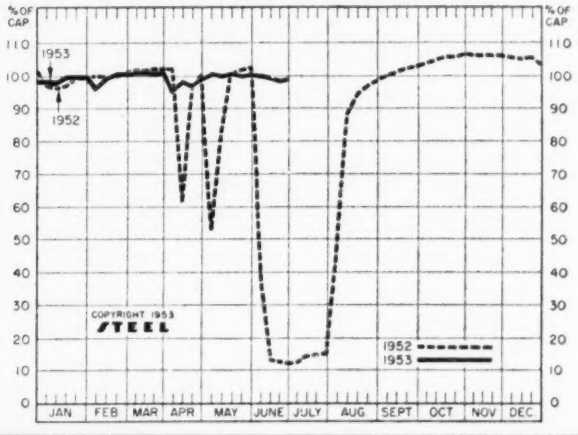
STANDS PAT— Evidence that there is apprehension over what lies ahead is the decision by Lukens Steel Co., Coatesville, Pa., not to raise its base prices of carbon and alloy steel plate in the face of the general increase in steel prices and warnings of impending cost increases. Lukens says it is highly cognizant of the fact its customers have a competitive position to maintain and wants to do all in its power to assist them. So, Lukens is going to try to absorb the increases in costs of labor and materials. The extent of raw materials price increases as time passes will determine Lukens ability to succeed in this action.

SIGNIFICANT— Significantly, the decision was made in the face of a current strong demand for the heavy and wide plates like Lukens produces. Also, not many mills make big plates.

Following the price uptrend set off by wage increases to the steelworkers is iron ore. A major ore interest announced that Lake Superior iron ore will cost the user 15 cents a ton more beginning Wednesday.

FAST PACE— It's too early yet to determine what effect the price increases in the steel industry will have on steel demand. Order books for the major forms of steel are still well filled, and as a result, the near-capacity pace of steel production continues. In the week ended June 27, output of steel for ingots and castings, up 1 point over the preceding week, was at 99 per cent of capacity.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

(Percentage of capacity engaged at leading production points)

	Week Ended June 27	Change	Same 1952	Week 1951
Pittsburgh	99	+ 1*	2	99
Chicago	104.5	+ 0.5*	7.5	106
Mid-Atlantic	98	0	16	102
Youngstown	105	+ 15	0	105
Wheeling	100	+ 0.5	51.5	98.5
Cleveland	99.5	0	0	100.5
Buffalo	106.5	0	0	104
Birmingham	101	0	0.5	100
New England	85	0	18	87
Cincinnati	104	+ 9	32	97
St. Louis	99	0	22	99
Detroit	105	— 1	37	101
Western	107	— 1	33	105
Estimated National Rate	99	+ 1	12	103

*Change from preceding week's revised rate.

Weekly steelmaking capacity is estimated at 2,254,450 net tons in 1953; 2,077,040 tons in 1952; 1,960,034 tons in 1951.

The Metalworking Outlook—p. 31 Production-Engineering News—p. 87

Composite Market Averages

FINISHED STEEL PRICE INDEX: Bureau of Labor Statistics	June 23 1953	June 16 1953	Month Ago	May Average
(1947-1949=100)	141.5	136.6	136.6	133.7

AVERAGE PRICES (BUREAU OF LABOR STATISTICS)
Week Ended June 23, 1953

Units are 100 lb except where otherwise noted. For complete description of products see insert following p. 28, STEEL, Sept. 8, 1952.

Rails	$4.325	Sheets, C.R., carbon	$5.825
Track spikes	7.038	Sheets, galv.	6.965
Track bolts	10.175	Strip, C.R., carbon	5.450
Tie plates	5.058	Strip, C.R., stainless (lb)	0.348
Joint bars	5.275	Pipe, black, buttweld (100 ft)	7.773
Plates, carbon	4.488	Pipe, galv., buttweld (100 ft)	9.439
Structural shapes	4.650	Boiler tubes (100 ft)	36.950
Bars, tool steel (lb)	1.580	Tin plate (100 lb base box)	8.950
Bars, 3120 alloy	7.225	Terne plate (100 lb base box)	7.750
Bars, stainless (lb)	0.160	Wire, carbon, merchant	6.592
Bars, carbon	4.600	Wire, fence, galv.	7.217
Bars, reinforcing	4.450	Nails (100 lb kegs)	7.590
Bars, CF., carbon	6.550	Wire, barbed (80 rod spool)	6.240
Sheets, H.R., carbon	4.525	Woven wire fence (20 rod roll)	14.271

FINISHED PRICE INDEX, Weighted:

Calculated by STEEL*	June 25 1953	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Index (1935-39 av.=100)	187.73	187.38	182.82	171.92	134.56
Index in cents per lb.	5.086	5.076	4.953	4.657	3.645

ARITHMETICAL PRICE COMPOSITES:

Calculated by STEEL*					
Finished Steel NT	$113.44†	$111.93†	$111.28	$106.32	$80.27
No. 2 Fdry, Pig Iron, GT	55.04	55.04	55.04	52.54	40.96
Basic Pig Iron, GT	54.66	54.66	54.66	52.16	40.49
Malleable Pig Iron, GT	55.77	55.77	55.77	53.27	41.54
Steelmaking Scrap, GT	40.50	39.83	39.00	41.50	40.67

* For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.
† Preliminary.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED MATERIALS	June 25 1953	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh	4.15	4.15	3.95	3.70	2.875
Bars, H.R., Chicago	4.15	4.15	3.95	3.70	2.875
Bars, H.R., del. Philadelphia	5.302	5.302	4.502	4.252	3.365
Bars, C.F., Pittsburgh	5.20	5.20	4.925	4.55	3.50
Shapes, Std., Pittsburgh	4.10	4.10	3.85	3.65	2.775
Shapes, Std., Chicago	4.10	4.10	3.85	3.65	2.775
Shapes, del., Philadelphia	4.38	4.38	4.13	3.93	2.98
Plates, Pittsburgh	4.10	4.10	3.90	3.70	2.925
Plates, Chicago	4.10	4.10	3.90	3.70	2.925
Plates, Coatesville, Pa.	4.35	4.35	4.35	4.15	3.45
Plates, Sparrows Point, Md.	4.10	4.10	3.90	3.70	2.95
Plates, Claymont, Del.	4.55	4.35	4.35	4.15	3.65
Sheets, H.R., Pittsburgh	3.925	3.925	3.775	3.60-75	2.775
Sheets, H.R., Chicago	3.925	3.925	3.775	3.60	2.775
Sheets, C.R., Pittsburgh	4.775	4.775	4.575	4.35	3.50
Sheets, C.R., Chicago	4.775	4.775	4.575	4.35	3.50
Sheets, C.R., Detroit	4.975	4.775	4.775	4.55	3.71
Sheets, Galv., Pittsburgh	5.275	5.275	5.075	4.80	3.90
Strip, H.R., Pitts.	3.975-4.225	3.975-4.225	3.975-4.225	3.75-4.00	3.05
Strip, H.R., Chicago	3.925	3.925	3.725	3.50	2.775
Strip, C.R., Pittsburgh	5.45-5.70	5.10-5.80	5.10-5.80	4.65-5.35	3.775
Strip, C.R., Chicago	5.70	5.70	5.35	4.90	3.60
Strip, C.R., Detroit	5.45-6.05	5.30-6.05	5.30-6.05	4.85-5.60	3.71
Wire, Basic, Pitts.	5.475-5.525	5.475-5.225	5.475-5.225	4.85-5.10	3.725
Nails, Wire, Pittsburgh	6.55	6.55	6.35	5.90-6.20	5.125
Tin plate, box, Pittsburgh	$8.95	$8.95	$8.95	$8.70	$6.60
SEMIFINISHED					
Billets, forging, Pitts. (NT)	$75.50	$75.50	$70.50	$66.00	$54.00
Wire rods, ⅜-⅝", Pitts.	4.525	4.525	4.425	4.10-30	3.175
PIG IRON, Gross Ton					
Bessemer, Pitts.	$55.50	$55.50	$55.50	$53.00	$43.00
Basic, Valley	54.50	54.50	54.50	52.00	39.00
Basic, del. Phila.	59.25	59.25	59.25	56.75	42.17
No. 2 Fdry, Pitts.	55.00	55.00	55.00	52.50	42.50
No. 2 Fdry, Chicago	55.00	55.00	55.00	52.50	39.00
No. 2 Fdry, Valley	55.00	55.00	55.00	52.50	39.50
No. 2 Fdry, del. Phila.	59.75	59.75	59.75	57.25	42.67
No. 2 Fdry, Birm.	51.38	51.38	51.38	48.88	39.38
No. 2 Fdry (Birm.) del. Cin.	58.93	58.93	58.93	56.43	45.09
Malleable, Valley	55.00	55.00	55.00	52.50	39.50
Malleable, Chicago	55.00	55.00	55.00	52.50	39.50
Charcoal, Lyles, Tenn.	68.50	68.50	68.50	66.00	58.00
Ferromanganese, Etna, Pa.	200.00†	200.00†	200.00†	188.00‡	151.00*

*F.o.b. cars, Pittsburgh; 78-82% Mn, per gross ton. †74-76% Mn, per net ton. ‡78-82% Mn, per gross ton.

SCRAP, Gross Ton (Including broker's commission)

No. 1 Heavy Melt, Pitts.	$42.50	$40.50	$39.50	$44.00	$40.25
No. 1 Heavy Melt, E. Pa.	41.50	41.50	41.50	38.00	42.50
No. 1 Heavy Melt, Chicago	37.50	37.50	36.00	42.50	39.25
No. 1 Heavy Melt, Valley	45.50	42.50	41.50	44.00	40.25
No. 1 Heavy Melt, Cleve.	43.50	40.50	39.00	43.00	39.75
No. 1 Heavy Melt, Buffalo	40.75	40.75	41.75	37.00	44.00
Rails, Rerolling, Chicago	49.00	47.50	47.50	52.50	54.50
No. 1 Cast, Chicago	39.00	39.00	39.50	45.00	68.50

†F.o.b. shipping point.

COKE, Net Ton

Beehive, Furn, Connlsvl.	$14.75	$14.75	$14.75	$14.75	$13.00
Beehive, Fdry, Connlsvl.	17.00	17.00	17.00	17.50	15.50
Oven Fdry, Chicago	24.50	24.50	24.50	23.00	19.50

PIG IRON

F.o.b. furnace prices as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax. Key to producing companies on pages 136-137.

PIG IRON, Gross Ton	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem, Pa. B2	$56.50	$57.00	$57.50	$58.00
NewYork, del.	....	60.78	61.28	....
Newark, del.	59.52	60.02	60.52	61.02
Philadelphia, del.	59.25	59.75	60.25	60.75
Birmingham District				
AlabamaCity, Ala. R2	50.88	51.38	....	....
Birmingham R2	50.88	51.38	....	....
Birmingham S9	....	51.38	....	....
Woodward, Ala. W15	50.88	51.38	....	....
Cincinnati, del.	....	58.93	....	....
Buffalo District				
Buffalo R2	54.50	55.00	55.50	....
Buffalo H1	54.50	55.00	55.50	....
Tonawanda, N.Y. W12	54.50	55.00	55.50	....
No. Tonawanda, N.Y. T9	....	55.00	55.50	....
Boston, del.	65.15	65.65	66.15	....
Rochester, N.Y., del.	57.52	58.02	58.52	....
Syracuse, N.Y., del.	58.62	59.12	59.62	....
Chicago District				
Chicago I-3	54.50	55.00	55.00	55.50
Gary, Ind. U5	54.50	....	55.00	....
IndianaHarbor, Ind. I-2	54.50	....	55.00	....
So. Chicago, Ill. W14	54.50	55.00	55.00	....
So. Chicago, Ill. Y1	54.50	55.00	55.00	....
So. Chicago, Ill. U5	54.50	....	55.00	55.50
Milwaukee, del.	56.67	57.17	57.17	57.67
Muskegon, Mich., del.	....	61.30	61.30	....
Cleveland District				
Cleveland A7	54.50	55.00	55.00	55.50
Cleveland R2	54.50	55.00	55.00	....
Akron, O., del. from Cleve.	57.11	57.61	57.61	58.11
Lorain, O. N3	54.50	....	....	55.50
Duluth I-3	....	....	55.00	....
Erie, Pa. I-3	54.50	55.00	55.00	55.50
Everett, Mass. E1	....	59.50	60.00	....
Fontana, Calif. K1	60.50	61.00	....	....
GraniteCity, Ill. G4	56.40	56.90	57.40	....
St. Louis, del. (inc. tax)	57.15	57.65	58.15	....
Ironton, Utah C11	54.50	55.00	....	....
Geneva, Utah C11	54.50	55.00	....	....
LoneStar, Texas. L6	50.50	*51.00	51.00	....
Minnequa, Colo. C10	56.50	57.50	57.50	....
Rockwood, Tenn. T3	....	....	58.50	....
Pittsburgh District				
NevilleIsland, Pa. P6	....	55.00	55.00	55.50
Pitts., N.&S. sides, Ambridge				
Aliquippa, del.	....	56.37	56.37	56.87
McKeesRocks, del.	....	56.04	56.04	56.54
Lawrenceville, Homestead, Wilmerding, Monaca, del.	....	56.66	56.66	57.16
Verona, Trafford, del.	....	57.19	57.19	57.69
Brackenridge, del.	....	57.45	57.45	57.95
Bessemer, Pa. U5	54.50	....	55.00	55.50
Clairton, Rankin, So. Duquesne, Pa. U5	54.50	....	....	....
McKeesport, Pa. N3	54.50	....	....	55.50
Monessen, Pa. P7	56.50	....	....	....
Sharpsville, Pa. S6	....	....	55.00	55.50
Steelton, Pa. B2	56.50	57.00	57.50	58.00
Swedeland, Pa. A3	58.50	59.00	59.50	60.00
Toledo, O. I-3	54.50	55.00	55.00	55.50
Cincinnati, del.	59.97	60.47	....	....
Troy, N.Y. R2	56.50	57.00	57.50	58.00
Youngstown District				
Hubbard, O. Y1	54.50	55.00	55.00	....
Youngstown Y1	54.50	55.00	55.00	....
Youngstown U5	54.50	....	....	55.50
Mansfield, O., del.	59.15	59.65	59.65	60.15

* Low phos, southern grade.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.
Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.
Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.
Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton
(Base 6.0-6.50% silicon; add $1.50 for each 0.5% Si)

Jackson, O. G2, J1	$65.50
Buffalo H1	66.75

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton
(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1.055 for each 0.5% Mn over 1%; $2 per gross ton premium for 0.045% max P)

NiagaraFalls, N.Y. P15	$91.00
Keokuk, Iowa, Openhearth & Fdry. freight allowed K2	95.50
Keokuk, OH & Fdry., 12½ lb piglets, 16% Si, frt. allowed K2	98.50
Wenatchee, Wash., OH & Fdry., freight allowed K2	95.50

CHARCOAL PIG IRON, Gross Ton
(Low phos semi-cold blast; differential charged for silicon over base grade; also for hard chilling iron Nos. 5 & 6)

Lyles, Tenn. T3	$68.50

LOW PHOSPHORUS PIG IRON, Gross Ton

Cleveland, intermediate, A7	$59.50
Steelton, Pa. B2	62.50
Philadelphia, delivered	66.05
Troy, N.Y. R2	62.50

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NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

Primary Metals

Copper: Electrolytic 29.75-30.00c, Conn. Valley; Lake nom.; foreign electrolytic, del. 29.75-30.00c.

Brass Ingots: 85-5-5-5 (No. 115) 26.00c; 88-10-2 (No. 215) 34.75c; 80-10-10 (No. 305) 30.00c; No. 1 yellow (No. 405) 21.25c.

Zinc: Prime western 11.00c; brass special 11.25c; intermediate 11.50c; East St. Louis; high grade 12.35c, and special high grade 12.50c delivered.

Lead: Common 13.30c; chemical 13.40c; corroding 13.40c; St. Louis.

Primary Aluminum: 99% plus, ingots 20.50c, pigs 19.50c. Base prices for 10,000 lb and over. Freight allowed on 500 lb or more but not in excess of rate applicable on 30,000 lb c.l. orders.

Secondary Aluminum: Piston alloys 23.00-23.75; No. 12 foundry alloy (No. 2 grade) 22.50-23.25; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 23.75-24.50; grade 2, 23.00-23.75; grade 3, 22.00-22.50; grade 4, 21.00-21.50.

Magnesium: Commercially pure (99.8%) standard ingots, 10,000 lb and over 27.00c, f.o.b. Freeport, Tex.

Tin: Grade A, prompt RFC, 121.50c; outside market 93.00c.

Antimony: American 99-99.8% and over but not meeting specifications below 34.50c; 99.8% and over (arsenic 0.05% max., other impurities 0.1% max.) 35.00c; f.o.b. Laredo, Tex., for bulk shipments.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 60.00c; 25-lb pigs 62.65c; "XX" nickel shot, 63.65c; "F" nickel shot or ingots, for addition to cast iron, 60.00c. Prices include import duty.

Mercury: Open market, spot, New York, $189-$193 per 76-lb flask.

Cadmium: "Regular" straight or flat forms, $2 deld.; special or patented shapes $2.15.

Beryllium-Copper: 3.75-4.25% Be, $40.00 per lb of contained beryllium, with balance as copper at market price on date of shipment, f.o.b. Reading, Pa., or Elmore, O.

Cobalt: 97.99%, $2.40 per lb for 500 lb (kegs); $2.42 per lb for 100 lb (case); $2.47 per lb under 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Silver: Open-market, New York 85.25c per oz.

Platinum: $90-$93 per ounce from refineries.

Palladium: $23-$24 per troy ounce.

Iridium: $165-$175 per troy ounce.

Titanium: (sponge form): $5 per pound.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Cents per pound, f.o.b. mill, effective Apr. 1, 1953. Listings are lowest quotations.)

Sheet: Copper 50.48; yellow brass 42.87; commercial bronze, 95% 49.89; 90% 48.76; red brass, 85% 47.11; 80% 45.99; best quality, 44.43; nickel silver, 18%, 59.84; phosphor-bronze grade A, 5%, 70.50.

Rod: Copper, hot-rolled 46.83; cold-drawn 48.08; yellow brass free cutting, 36.68; commercial bronze 95% 49.58; 90% 48.45; red brass 85%, 46.80; 80%, 45.68.

Seamless Tubing: Copper 50.42; yellow brass 45.78; commercial bronze, 90%, 51.32; red brass, 85%, 49.92.

Wire: Yellow brass 43.16; commercial bronze, 95%, 50.18; 90%, 49.05; red brass, 85%, 47.40; 80%, 46.28; best quality brass, 44.72.

(Base prices effective Apr. 1, 1953)

Copper Wire: Bare, soft, f.o.b. eastern mills, 100,000 lb lots, 37.46; 30,000 lb lots, 37.58; l.c.l. 38.08. Weatherproof, 100,000 lb, 37.65; 30,000 lb, 38.10; l.c.l., 38.60. Magnet wire del., 15,000 lb or more 43.93; l.c.l., 44.68.

ALUMINUM

(30,000 lb base; freight allowed on 500 lb or more, but not in excess of rate applicable on 30,000 lb c.l. orders. Effective Jan. 22, 1953.)

Sheets and Circles: 2s and 3s mill finish c.l.

Thickness Range Inches	Widths or Diameters, In., Inc.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48	32.9	...	...
0.135-0.096	12-48	33.4	...	...
0.095-0.077	12-48	34.1	31.8	36.3
0.076-0.061	12-48	34.7	32.0	36.5
0.060-0.048	12-48	35.0	32.2	36.8
0.047-0.038	12-48	35.5	32.6	37.1
0.037-0.030	12-48	35.9	33.0	37.8
0.029-0.024	12-48	36.5	33.3	38.3
0.023-0.019	12-36	37.1	34.0	39.0
0.018-0.017	12-36	37.9	34.6	39.9
0.016-0.015	12-36	38.8	35.4	41.1
0.014	12-24	39.8	36.4	42.4
0.013-0.012	12-24	40.9	37.1	43.4
0.011	12-24	41.9	38.3	45.0
0.010-0.0095	12-24	43.1	39.4	46.6
0.009-0.0085	12-24	44.3	40.7	48.5
0.008-0.0075	12-24	45.8	41.9	50.3
0.007	12-18	47.3	43.4	52.6
0.006	12-18	48.9	44.8	57.6

* Lengths 72 to 180 inches. † Maximum diameter, 26 inches.

Screw Machine Stock: 5000 lb and over.

Dia. (in.) or distance across flats	—Round— 17S-T4	Hexagonal 17S-T4
0.125	56.8	...
0.156-0.188	48.0	...
0.219-0.313	45.3	...
0.375	43.7	52.4
0.406	43.7	...
0.438	43.7	52.4
0.469	43.7	...
0.500	43.7	52.4
0.531	43.7	...
0.563	43.7	49.2
0.594	43.7	...
0.625	43.7	49.2
0.688	43.7	49.2
0.750-1.000	42.6	46.4
1.063	42.6	44.8
1.125-1.500	41.0	44.8
1.563	40.5	...
1.625	39.8	43.2
1.688-2.000	39.8	...

LEAD

(Prices to jobbers f.o.b. Buffalo, Cleveland, Pittsburgh) **Sheets:** Full rolls, 140 sq ft or more $18.50 per cwt; add 50c cwt 100 sq ft to 140 sq ft. **Pipe:** Full coils $18.50 per cwt. **Traps and bends:** List prices plus 30%.

ZINC

Sheets 23.00c, f.o.b. mill 36,000 lb and over. Ribbon zinc in coils, 19.50-20.50c, f.o.b. mill, 36,000 lb and over. Plates, not over 12-in., 20.75-21.75c; over 12-in. 20.75-21.75c.

"A" NICKEL

(Base prices f.o.b. mill effective Mar. 9, 1953) Sheets, cold-rolled 86.50c. Strip, cold-rolled 92.50c. Rods and shapes, 82.50c. Plates, 84.50c. Seamless tubes 115.50c.

MONEL

(Base prices f.o.b. mill effective Mar. 9, 1953) Sheets, cold-rolled 67.50c. Strip, cold-rolled 70.50c. Rods and shapes, 65.50c. Plates 66.50c. Seamless tubes, 100.50c. Shot and blocks, 57.00c.

MAGNESIUM

Extruded Rounds 12 in. long, 1.31 in. in diameter, less than 25 lb 58.00c-65.00c; 25 to 99 lb, 48.00c-55.00c; 100 lb to 5000 lb, 44.00c.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill) Sheets, $15; sheared mill plate, $12; strip, $15; wire, $10; forgings, $6; hot-rolled and forged bars, $6.

Plating Materials

Chromic Acid: 99.9% flakes, f.o.b. Philadelphia, carloads 27.00c; 5 tons and over 27.50c; 1 to 5 tons, 28.00c; less than 1 ton 28.50c.

Copper Anodes: Base 2000 to 5000 lb; f.o.b. shipping point, freight allowed: Flat, rolled, 42.18c; oval 41.68c.

Nickel Anodes: Rolled, oval, carbonized, carloads 81.00c; 5000 to 29,999 lb, 83.00c; 500 to 4999 lb, 85.00c; 1 to 499 lb, 89.00c, f.o.b. Cleveland.

Nickel Chloride: In 100 lb bags; 10,000 lb and over, 37.00c; 5000 to 9900 lb, 38.00c; 400 to 4900 lb, 40.00c; 300 lb, 42.00c; 200 lb, 43.00c; 100 lb, 45.00c, f.o.b. Cleveland.

Sodium Stannate: 25 lb cans only, less than 100 lb to consumers 71c per lb; 100 to 350 lb drums only, 100 to 600 lb 56.7c; 700 to 1900 lb, 54.3c 2000 to 9900 lb, 52.5c. Freight allowed east of Mississippi and north of Ohio and Potomac rivers. Based on 93-cent tin.

Tin Anodes: Bar, 1000 lb and over, $1.09; 500 to 999 lb, $1.095; 200 to 499 lb $1.10; less than 200 lb, $1.115. Freight allowed east of Mississippi and north of Ohio and Potomac. Based on 93-cent tin.

Stannous Sulphate: 100 lb kegs or 400 lb bbl, less than 2000 lb 94.9c; more than 2000 lb, 92.9c. Freight allowed east of Mississippi and north of Ohio and Potomac rivers. Based on 93-cent tin.

Stannous Chloride (Anhydrous): In 400 lb bbl, $1.055; 100 lb kegs $1.08, f.o.b. Carteret, N.J., freight allowed on 100 lb or more. Based on 93-cent tin.

Zinc Cyanide: 100 lb drums, less than 10 drums 54.30c, 10 or more drums, 52.30c, f.o.b. Niagara Falls, N. Y.

Scrap Metals

Brass Mill Allowances

(Prices in cents per pound for less than 20,000 pounds, f.o.b. shipping point; on lots over 20,000 pounds at one time of any or all kinds of scrap, add 1 cent per pound.)

	Clean Heavy	Rod Ends	Clean Turnings
Copper	28.625	28.625	27.875
Yellow Brass	21.375	21.125	19.625
Commercial Bronze			
95%	27.250	27.000	26.500
90%	26.125	25.875	25.375
Red Brass			
85%	25.125	24.875	24.375
80%	24.125	23.875	23.375
Best Quality(71-80%)	22.500	22.250	21.750
Muntz metal	20.000	19.750	19.250
Nickel silver, 10%	25.250	25.000	12.625
Phos. Bronze, A	30.625	30.375	29.375
Naval Brass	20.000	19.750	19.250
Manganese Bronze	20.000	19.750	19.250

REFINERS' BUYING PRICES

(Cents per pound, delivered refinery, carload lots)

No. 1 copper 23.50 nom.; No. 2 copper 22.00; light copper 20.50; refinery brass (60% copper) per dry copper content 19.50.

INGOT MAKERS' COPPER AND BRASS SCRAP BUYING PRICES

(Cents per pound, carlots, delivered)

No. 1 copper 23.50 nom.; No. 2 copper, 22.00; light copper 20.50; No. 1 composition solids, 18.00-18.50; radiators 14.00-14.50; heavy yellow brass solids, 14.00-14.50; yellow brass turnings 13.50.

SMELTERS' BUYING PRICES FOR SCRAP ALUMINUM

(Carlots, delivered)

2S aluminum clippings, 16.00-17.00c; mixed clippings, 15.00-16.00c; old aluminum sheet, 14.00-14.25c; old aluminum cast, 14.00-14.50c; borings and turnings, 14.00-14.50.

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Copper and brass: Heavy copper and wire, No. 1 23.00; No. 2 copper 20.00; light copper 18.00; No. 1 composition red brass 17.00; No. 1 composition turnings 16.50; mixed brass turnings 16.00; new brass clippings 17.50; No. 1 brass rod turnings 16.00; light brass 10.00; heavy yellow brass 12.50; new brass rod ends 16.50; auto radiators, unsweated 13.00; cocks and faucets 15.00; brass pipe 16.00.

Aluminum: Clippings 2S 14.00; old sheets 10.00; crankcase 10.00; borings and turnings 7.50; pistons and struts 7.50.

Tin: No. 1 pewter 55.00; block tin pipe 80.00; No. 1 babbitt 45.00.

Lead: Heavy 10.50-11.00; battery plate 6.00-6.25; linotype and stereotype 12.75-13.25; electrotype 11.00-11.50; mixed babbitt 11.50-12.50.

Zinc: Old zinc, 4.50; new die cast scrap, 4.50; old die cast scrap, 3.50.

Nickel: Sheets and clips $1.00; rolled anodes $1.00; turnings 85.00; rod ends $1.00.

Monel: Clippings 33.00; old sheet 30.00; turnings 25.00; rods 33.00.

DAILY PRICE RECORD

1953	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
June 24-25	29.75-30.00	13.30	11.00	93.00	20.50	34.50	60.00	85.25
June 23	29.75-30.00	13.30	11.00	93.875	20.50	34.50	60.00	85.25
June 22	29.75-30.00	13.30	11.00	93.50	20.50	34.50	60.00	85.25
June 19-20	29.75-30.00	13.30	11.00	92.75	20.50	34.50	60.00	85.25
June 17-18	29.75-30.00	13.30	11.00	92.00	20.50	34.50	60.00	85.25
June 16	29.75-30.00	13.30	11.00	92.50	20.50	34.50	60.00	85.25
June 15	29.75-30.00	13.30	11.00	93.00	20.50	34.50	60.00	85.25
June 12-13	29.75-30.00	13.30	11.00	93.50	20.50	34.50	60.00	85.25
June 11	29.75-30.00	13.30	11.00	93.00	20.50	34.50	60.00	85.25
June 10	29.75-30.00	13.05	11.00	92.50	20.50	34.50	60.00	85.25
June 9	29.75-30.00	13.05	11.00	91.75	20.50	34.50	60.00	85.25
June 8	29.75-30.00	13.05	11.00	92.75	20.50	34.50	60.00	85.25
June 5-6	29.75-30.00	13.05	11.00	93.50	20.50	34.50	60.00	85.25
June 4	29.75-30.00	13.05	11.00	95.50	20.50	34.50	60.00	85.25
June 3	29.75-30.00	13.05	11.00	95.75	20.50	34.50	60.00	85.25
June 1-2	29.75-30.00	13.05	11.00	95.00	20.50	34.50	60.00	85.25
May Avg.	29.845	12.55	11.00	97.240	20.50	34.50	60.00	85.25

NOTE: Copper: Electrolytic, del. Conn. Valley; Lead, common grade, del. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, del. New York; Aluminum primary ingots, 99%, del.; Antimony, bulk f.o.b. Laredo, Tex.; Nickel, electrolytic cathodes, 99.9% base sizes at refinery unpacked. Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

Nonferrous Metals

Final hump in the path to plenty for all metals should be passed before end of this year. Two chief hurdles to be cleared are nickel and aluminum

FINAL hump on the rambling road to plenty for all metals will be passed before the year is out. Across-the-board end to scarcities will be a fact for the first time since the effects of Korea hit industry.

Two chief holdouts to supply-demand equilibrium today are nickel and aluminum. More and more, signs are springing up to indicate that even they will join the other metals before 1954 rolls around.

Third-Quarter Squeeze — Tightest constrictions in aluminum during July, August and September will be found in the heat-treatable alloys which are in greatest defense demand. Producers probably could find space in their August schedules for more common alloy products though.

In general, you can still locate some tubing, foil, rod and roll-form shapes around for delivery then. Lead time for August is past. Extrusions, seamless tubing, sheet and plate are all spoken for through September, even now.

Double Duty—Some aluminum men expect more rated orders for aluminum in the third quarter than ever before—even last year under CMP. Big reason is that aluminum mills have to catch up with backlogs then, as well as take care of setasides.

All unshipped defense orders carried over from the second quarter must be wiped out by Oct. 1. Carryovers into the third quarter will be sizable in many products. They can't be applied against required third-quarter setasides either, which in themselves will take 30 to 32 per cent of output.

Nickel Easing—Nickel men in the know believe consumers will get a few breaks soon, particularly the long-suffering electroplaters and brass mills. They estimate a 5 per cent per month increase in use allowances until the end of the year, when all controls may go off. NPA has maintained its pessimism so far. It doesn't want to raise industry hopes yet.

Some platers are still buying Japanese nickel at $2.00 to $2.15 a pound, but there are scattered indications that demand could be falling off, and supply is getting healthier by the month. It's still hard to come by rated orders but balance looks closer than it has been in some time. Overbuying by the military is under close scrutiny now. Scrap is easing too. The $1-a-pound buying price quoted by dealers for sheets, clips, rod ends and anodes is considered unrealistic in some quarters. Industry men point out that the steel industry and resistance-heating element people won't willingly pay that price for nickel scrap today.

They'll Watch Aluminum

Now that more aluminum is coming from plants built since Korea, a special committee under General Services Administration and with members from GSA and NPA, is being set up to oversee its distribution. Aluminum producers are under contract to GSA to supply two-thirds of this primary metal, less stockpile deductions, to nonintegrated fabricators. The aluminum expansion program's first and second rounds are now about 75 per cent complete. Some 110,000 tons of the estimated 325,000-ton third-quarter output will come from these new facilities.

Copper Headed for Decline

Copper price seems determined to set a new record for cliff-hanging. Actually there are two interrelated moves that almost must be made sometime this summer. One is the swinging of Chilean copper prices in line with the world level. Chile stands to lose about $8 million a month in copper sales if it comes down to 30 cents, but no one wants to pay an 11-cent premium for its output. Already about a month's shipments have piled up in South America and June-July tonnage shipped will be another goose-egg. Eventually that metal will have to be sold, and it will do the market little good if it hits all at once. A wave of price-cutting could follow easily. Rhodesian copper offered in U. S. markets already has passed the 30,000-ton mark.

The other question is how long the 30-cent mark can be held to. Copper futures are already below 25 cents for December deliveries, even lower for next spring. Custom smelters are again dropping their buying prices for scrap.

Brass Mill Goods Ease

Brass mill products are softening considerably. Two to three-week delivery is possible on everything but some alloy sheet and strip and copper tube. Well-sustained air conditioner sales have boomed the market for tubing. Stock deliveries are being made on wire, rod and bar.

Many industrial users and distributors of brass mill products are holding off buying today. They're fearful of a price drop when copper falls, as well as preparing for the summer production letdown.

Pessimism prevails in some sectors of the brass industry over fourth-quarter prospects. As one sales manager puts it, "Business may look good at the mill level, but it's lousy on the street."

Lead, Zinc Prices Static

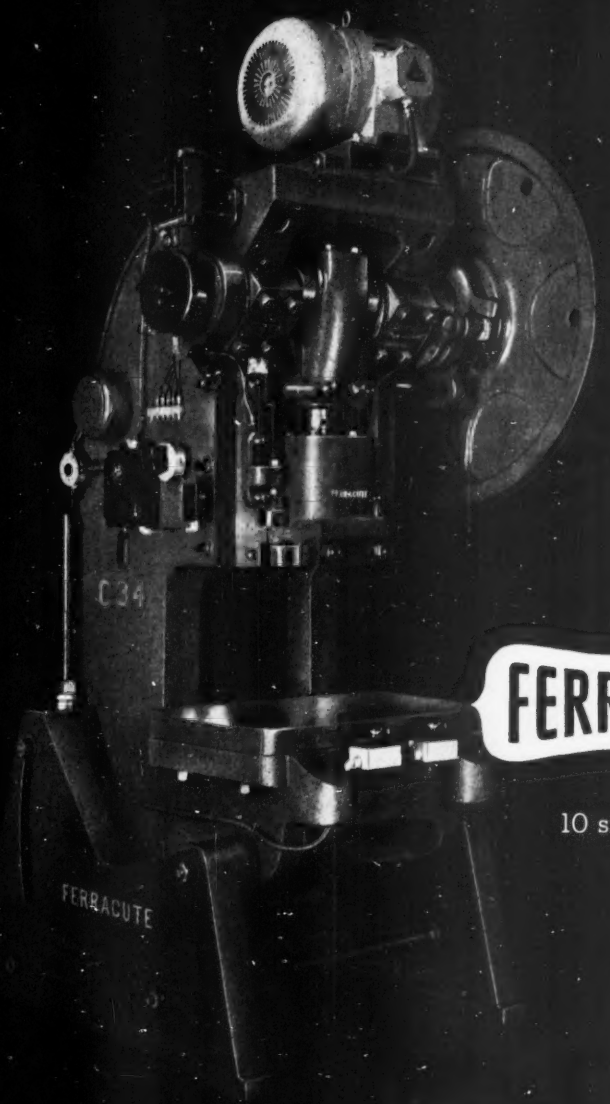
Price increases in lead and zinc are not in the cards now. They won't be until consumers abroad shake off some of their buying ennui. Consumption here is good, but imports still set the price. Zinc, weaker of the two, has been hurt by imports running 40 per cent higher than last year. On top of that, the London Ministry of Materials intends to dispose of 70,000 tons of the metal after July. Import price on zinc hovers in a 1 to 1.5-cent range below U. S. equivalent.

Prices on imported lead, however, skipped briefly above the domestic quotation and had U. S. sellers toying with the idea of a price hike. July lead buying is expected to slide off a bit as cable companies go on vacations. Battery makers and sheet and pipe fabricators will not shut down en masse.

They Used More Copper

Brass mills, wire mills and foundries increased consumption of copper in May 11,253 tons over April to 127,575 tons. Unfilled orders on fabricators' books going into June were down 13,107 tons to 285,425 tons, lowest since January.

NEED AN INCLINABLE?



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10 sizes - 6 to 200 tons

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Since 1863 Manufacturers of Power Presses & Special Machinery, FERRACUTE MACHINE CO., Bridgeton, N. J. U.S.A.

Semifinished and Finished Steel Products

Mill prices as reported to STEEL, cents per pound except as otherwise noted. Changes shown in italics.
Code numbers following mill points indicate producing company; key on pages 136-137.

INGOTS, Carbon, Forging (NT)
Fontana,Calif. K1 $80.00
Munhall,Pa. U5 ....54.00
Seattle S24 ....75.00

INGOTS Alloy (NT)
Detroit R7 $63.00
Fontana,Calif. K1 88.00
Houston S5 ....66.00
Midland,Pa. C18 ....57.00
Munhall,Pa. U5 ....62.00

BILLETS, BLOOMS & SLABS
Carbon Rerolling (NT)
Bessemer,Pa. U5 ....$62.00
Clairton,Pa. U5 ....62.00
Ensley,Ala. T2 ....62.00
Fairfield,Ala. T2 ....62.00
Fontana,Calif. K1 81.00
Gary,Ind. U5 ....62.00
Johnstown,Pa. B2 ....62.00
Lackawanna,N.Y. B2 ..62.00
Munhall,Pa. U5 ....62.00
So.Chicago,Ill. U5 ....62.00
So.Duquesne,Pa. U5 ..62.00

Carbon, Forging (NT)
Bessemer,Pa. U5 ....$75.50
Buffalo R2 75.50
Canton,O. R2 75.50
Clairton,Pa. U5 ....75.50
Cleveland R2 75.50
Conshohocken,Pa. A3 82.50
Detroit R7 78.50
Ensley,Ala. T2 ....76.50
Fairfield,Ala. T2 ....76.50
Fontana,Calif. K1 94.50
Gary,Ind. U5 ....76.50
Geneva,Utah C11 ....70.50
Houston S5 ....78.50
Johnstown,Pa. B2 ....75.50
Lackawanna,N.Y. B2 ..75.50
LosAngeles B3 94.50
Munhall,Pa. U5 ....75.50
Seattle B3, S24 94.50
So.Chicago R2, U5, W14 75.50
So.Duquesne,Pa. U5 ..75.50
So.SanFrancisco B3 94.50

Alloy, Forging (NT)
Bethlehem,Pa. B2 ....$76.00
Buffalo R2 82.00
Canton,O. R2 82.00
Canton,O. T7 ....78.00
Conshohocken,Pa. A3 89.00
Detroit R7 85.00
Fontana,Calif. K1 101.00
Gary,Ind. U5 ....82.00
Houston S5 ....84.00
Ind.Harbor,Ind. Y1 82.00
Johnstown,Pa. B2 ....76.00
Lackawanna,N.Y. B2 ..76.00
LosAngeles B3 102.00
Massillon,O. R2 82.00
Midland,Pa. C18 ....76.00
Munhall,Pa. U5 ....82.00
Seattle S24 ....96.00
So.Chicago R2, U5, W14 82.00
So.Duquesne,Pa. U5 ..82.00
Struthers,O. Y1 82.00
Warren,O. C17 ....76.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 ....$87.50
Canton,O. R2 92.50
Cleveland R2 92.50
Fontana,Calif. K1 113.50
Gary,Ind. U5 ....87.50
Massillon,O. R2 92.50
So.Chicago,Ill. R2 92.50
So.Duquesne,Pa. U5 ..87.50

SHEET BAR (NT)
Fontana,Calif. K1 ....$93.18

SKELP
Aliquippa,Pa. J5 ....3.85
Munhall,Pa. U5 ....3.75
Warren,O. R2 3.75
Youngstown R2, U5 3.75

WIRE RODS
Alton,Ill. L1 ....4.70
AlabamaCity,Ala. R2 4.525
Buffalo W12 ....4.326
Cleveland A7 ....4.525
Donora,Pa. A7 ....4.525
Fairfield,Ala. T2 ....4.525
Fontana,Calif. K1 5.325
Houston S5 ....4.725
Johnstown,Pa. B2 4.525
Joliet,Ill. A7 ....4.525
KansasCity,Mo. S5 ....4.665
LosAngeles B3 5.275
Minnequa,Colo. C10 ..4.575
Monessen,Pa. P7 ....4.525
No.Tonawanda,N.Y.B11 4.325
Pittsburg,Calif. C11 ..5.175
Portsmouth,O. P12 4.725
Roebling,N.J. R5 ....4.425
So.Chicago,Ill. R2 4.525
SparrowsPoint,Md. B2 4.625
Sterling,Ill.(1) N15 4.525
Struthers,O. Y1 4.525
Torrance,Calif. C11 ..5.325
Worcester,Mass. A7 ...4.825

STEEL SHEET PILING
Ind.Harbor,Ind. I-2 ...4.925
Lackawanna,N.Y. B2 4.925
Munhall,Pa. U5 ....4.925
So.Chicago,Ill. U5 ....4.925

STRUCTURALS
Carbon Steel Stand. Shapes
Alabama City,Ala. R2 4.10
Aliquippa,Pa. J5 ....4.10
Bethlehem,Pa. B2 ....4.15
Bessemer,Ala. T2 ....4.10
Clairton,Pa. U5 ....4.10
Fairfield,Ala. T2 ....4.10
Fontana,Calif. K1 4.25
Gary,Ind. U5 ....4.10
Geneva,Utah C11 ....4.10
Houston S5 ....4.25
Ind.Harbor,Ind. I-2 ....4.10
Johnstown,Pa. B2 ....4.15
KansasCity,Mo. S5 ....4.45
Lackawanna,N.Y. B2 ..4.15
LosAngeles B3 4.80
Minnequa,Colo. C10 ....4.30
Munhall,Pa. U5 ....4.10
Niles,Calif.(22) P1 ....4.56
Phoenixville,Pa. P4 ....4.95
Seattle B3 4.85
So.Chicago,Ill. U5, W14 4.10
So.SanFrancisco B3 4.75
Torrance,Calif. C11 ....4.80
Weirton,W.Va. W6 4.35

Wide Flange
Bethlehem,Pa. B2 ....4.15
Clairton,Pa. U5 ....4.10
Fontana,Calif. K1 5.30
Lackawanna,N.Y. B2 ..4.15
Munhall,Pa. U5 ....4.10
So.Chicago,Ill. U5 ....4.10

Alloy Stand. Shapes
Clairton,Pa. U5 ....5.00
Fontana,Calif. K1 6.40
Gary,Ind. U5 ....5.00
Munhall,Pa. U5 ....5.00
So.Chicago,Ill. U5 ....5.00

H.S., L.A. Stand. Shapes
Aliquippa,Pa. J5 ....6.175
Bessemer,Ala. T2 ....6.175
Bethlehem,Pa. B2 ....6.20
Clairton,Pa. U5 ....6.175
Fairfield,Ala. T2 ....6.175
Fontana,Calif. K1 6.825
Gary,Ind. U5 ....6.175
Geneva,Utah C11 ....5.80
Ind.Harbor,Ind. I-2 ....5.80
Ind.Harbor,Ind. Y1 6.675
Johnstown,Pa. B2 6.20
Lackawanna,N.Y. B2 ..6.20
LosAngeles B3 6.85
Munhall,Pa. U5 ....6.175
Seattle B3 6.90
So.Chicago,Ill. U5, W14 6.175
So.SanFrancisco B3 6.80
Struthers,O. Y1 6.675

H.S., L.A. Wide Flange
Bethlehem,Pa. B2 ....6.20
Lackawanna,N.Y. B2 ..6.20
Munhall,Pa. U5 ....6.125
So.Chicago,Ill. U5 ....6.125

BEARING PILES
Munhall,Pa. U5 ....4.10
So.Chicago,Ill. U5 ....4.10

PLATES,High-Strength Low-Alloy
Aliquippa,Pa. J5 ....6.25
Bessemer,Ala. T2 ....6.25
Clairton,Pa. U5 ....6.25
Cleveland R2 ....5.95
Cleveland J5 ....6.25
Conshohocken,Pa. A3 6.50
Ecorse,Mich. G5 7.10
Fairfield,Ala. T2 ....6.25
Fontana,Calif.(30) K1 6.95
Gary,Ind. U5 ....6.25
Geneva,Utah C11 ....6.25
Ind.Harbor,Ind. I-2 ....5.95
Ind.Harbor,Ind. Y1 6.75
Johnstown,Pa. B2 6.25
Munhall,Pa. U5 ....6.25
Pittsburg J5 ....6.25
Seattle B3 7.15
Sharon,Pa. S3 6.25
So.Chicago,Ill. U5, W14 6.25
SparrowsPoint,Md. B2 6.25
Warren,O. R2 ....5.95
Youngstown U5 ....6.25
Youngstown Y1 6.75

PLATES, Open-Hearth Alloy
Claymont,Del. C22 5.65
Coatesville,Pa. L7 ....5.75
Fontana,Calif. K1 6.60
Gary,Ind. U5 ....5.55
Johnstown,Pa. B2 5.55
Munhall,Pa. U5 ....5.55
Sharon,Pa. S3 ....5.70
So.Chicago,Ill. U5, W14 5.55
SparrowsPoint,Md. B2 5.55

FLOOR PLATES
Cleveland J5 ....5.15
Conshohocken,Pa. A3 ..6.15
Ind.Harbor,Ind. I-2 ....5.15
Munhall,Pa. U5 ....4.95
So.Chicago,Ill. U5 ....4.95

PLATES, Carbon A.R.
Fontana,Calif. K1 5.90
Geneva,Utah C11 ....5.25

PLATES, Ingot Iron
Ashland,c.l. (15) A10 4.35
Ashland,l.c.l. (15) A10 4.85
Cleveland,c.l. 4.70
Warren,O., c.l. R2 4.70

PLATES, Carbon Steel
Alabama City,Ala. K2 4.10
Aliquippa,Pa. J5 ....4.10
Ashland,Ky. (15) A10 ..4.10
Bessemer,Ala. T2 ....4.10
Clairton,Pa. U5 ....4.10
Claymont,Del. C22 4.85
Cleveland J5, R2 4.10
Coatesville,Pa. L7 ....4.35
Conshohocken,Pa. A3 ..4.55
Ecorse,Mich. G5 4.65
Fairfield,Ala. T2 ....4.10
Fontana,Calif.(30) K1 4.75
Gary,Ind. U5 ....4.10
GraniteCity,Ill. G4 ....4.60
Geneva,Utah C11 ....4.10
Harrisburg,Pa. C5 ....6.50
Houston S5 ....4.30
Ind.Harbor,Ind. I-2, Y1 4.10
Johnstown,Pa. B2 ....4.10
Lackawanna,N.Y. B2 ..4.10
Minnequa,Colo. C10 ....4.70
Munhall,Pa. U5 ....4.10
Pittsburgh J5 ....4.10
Riverdale,Ill. A1 ....4.10
Seattle B3 5.00
Sharon,Pa. S3 4.10
So.Chicago,Ill. U5, W14 4.10
SparrowsPoint,Md. B2 ..4.10
Steubenville,O. W10 ...3.90
Warren,O. R2 4.10
Weirton,W.Va. W6 4.40
Youngstown R2, U5, Y1 4.10

PLATES, Wrought Iron
(Add 4.7% to base, extras)
Economy,Pa. B14 ....8.60

BARS, Hot-Rolled Carbon
AlabamaCity,Ala. R2 4.15
Aliquippa,Pa. J5 ....4.15
Alton,Ill. L1 ....4.50
Atlanta,Ga. A11 4.45
Bessemer,Ala. T2 ....4.15
Buffalo R2 4.15
Cleveland R2 4.15
Detroit R7 4.30
Ecorse,Mich. G5 4.50
Emeryville,Calif. J7 ....4.70
Fairfield,Ala. T2 ....4.15
Fontana,Calif. K1 4.85
Gary,Ind. U5 ....4.15
Houston S5 ....4.35
Ind.Harbor,Ind. I-2, Y1 4.15
Johnstown,Pa. B2 4.15
KansasCity,Mo. S5 ....4.55
Lackawanna,N.Y. B2 4.15
LosAngeles B3 4.85
Milton,Pa. B6 ....4.55
Minnequa,Colo. C10 ....4.40
Niles,Calif. P1 ....4.65
N.Tonawanda,N.Y. B11.3.95
Pittsburg,Calif. C11 ....4.85
Pittsburgh J5 ....4.15
Portland,Oreg. O4 4.90
Seattle B3, N14, S24 4.90
So.Chicago R2, U5, W14 4.15
So.Duquesne,Pa. U5 ....4.15
So.SanFran.,Calif. B3 4.90
Sterling,Ill. N15 4.75
Struthers,O. Y1 4.15
Torrance,Calif. C11 ....4.85
Weirton,W.Va. W6 4.30
Youngstown R2, U5 4.15

BAR SHAPES, Hot-Rolled Alloy
Clairton,Pa. U5 5.00
Fontana,Calif. K1 6.00
Gary,Ind. U5 5.00
Youngstown U5 5.00

BAR SIZE ANGLES; S. Shapes
Aliquippa,Pa. J5 ....4.15
Atlanta A11 4.45
Niles,Calif. P1 ....4.65
SanFrancisco S7 ....5.00

BAR SIZE ANGLES;H.R.CARBON
Bethlehem,Pa. B2 ....4.15

BARS, Hot-Rolled Alloy
Bethlehem,Pa. B2 ....4.875
Buffalo R2 4.875
Canton,O. T7 ....4.72
Canton,O. R2 4.875
Clairton,Pa. U5 ....4.875
Detroit R7 5.025
Ecorse,Mich. G5 5.225
Fontana,Calif. K1 5.925
Gary,Ind. U5 ....4.875
Houston S5 ....5.075
Ind.Harbor,Ind. I-2, Y1 4.875
Johnstown,Pa. B2 ....4.875
KansasCity,Mo. S5 ....5.275
Lackawanna,N.Y. B2..4.875
LosAngeles B3 5.925
Massillon,O. R2 4.875
Midland,Pa. C18 ....4.675

BARS, Reinforcing (Fabricated; to consumers)

Huntington,W.Va. W7	.5.50
Johnstown, ¼-1" B2	.5.25
KansasCity S5	.6.05
LosAngeles B3	.5.45
Marion,O. P11	.6.25
Seattle B3, N14	.5.80
Sand Springs S5	.6.45
So.SanFrancisco B3	.5.45
SparrowsPt. ¼-1" B2	.5.25
Williamsport,Pa. S19	.5.35

RAIL STEEL BARS

ChicagoHts.(3,4) C2	.4.75
ChicagoHts.(3,4) 1-2	.4.50
Franklin,Pa.(3,4) F5	.4.75
FortWorth,Tex.(26) T4	.4.85
Huntngt,W.Va.(3) W7	.5.75
Marion,O.(3) P11	.4.75
Moline,Ill.(3) R2	.4.05
Tonawanda(3,4) B12	.5.00
Williamsport(3) S19	.5.25
Williamsport,Pa. S19	.5.35

BARS, Wrought Iron (Add 4.7% to base and extras)

Economy,Pa.(S.R.) B14	9.60
Economy,Pa.(D.R.)B14	11.90
Economy(Staybolt) B14	12.20
McK.Rks.(Staybolt) L5	14.50
McK.Rks.(S.R.) L5	9.60
McK.Rks.(D.R.) L5	13.00

SHEETS, Hot-Rolled Steel (18 gage and heavier)

AlabamaCity,Ala. R2	*3.925*
Ashland,Ky.(8) A10	*3.925*
Butler,Pa. A10	3.925
Cleveland J5, R2	*3.975*
Conshohocken,Pa. A3	4.325
Detroit M1	4.40
Ecorse,Mich. G5	*4.125*
Fairfield,Ala. T2	3.925
Fontana,Calif. K1	*4.70*
Gary,Ind. U5	3.925
Geneva,Utah C11	4.025
GraniteCity,Ill. G4	4.30
Ind.Harbor,Ind. I-2, Y1	*3.925*
Irvin,Pa. U5	3.925
Lackawanna,N.Y. B2	3.925
Munhall,Pa. U5	3.925
Niles,O. N12	5.425
Pittsburg,Calif. C11	4.625
Pittsburgh J5	3.925
Riverdale,Ill. A1	3.925
Sharon,Pa. S3	*4.225*
So.Chicago,Ill. W14	*3.925*
SparrowsPoint,Md. B2	3.925
Steubenville,O. W10	3.775
Torrance,Calif. C11	4.625
Warren,O. R2	*3.925*
Weirton,W.Va. W6	*3.925*
WestLeechburg,Pa. A4	3.925
Youngstown U5, Y1	*3.925*

SHEETS, H.R. (19 gage)

AlabamaCity,Ala. R2	*5.125*
Dover,O. R1	5.825
Mansfield,O. E6	5.65
Niles,O. N12	5.675
Torrance,Calif. C11	5.575

SHEETS, Cold-Rolled High-Strength Low-Alloy

Cleveland J5, R2	*7.225*
Ecorse,Mich. G5	*7.675*
Fontana,Calif. K1	*8.275*
Gary,Ind. U5	7.225
IndianaHarbor,Ind. Y1	*7.725*
IndianaHarbor,Ind. I-2	6.925
Irvin,Pa. U5	7.225
Lackawanna(37) B2	*7.225*
Pittsburgh J5	7.225
SparrowsPoint (38) B2	*7.225*
Warren,O. R2	*7.225*
Weirton,W.Va. W6	*7.475*
Youngstown Y1	*7.225*

SHEETS, H.R. (14 ga. heavier) High-Strength Low-Alloy

Cleveland J5, R2	*5.90*
Conshohocken,Pa. A3	*6.15*
Ecorse,Mich. G5	*6.375*
Fairfield,Ala. T2	5.90
Fontana,Calif. K1	*7.00*
Gary,Ind. U5	5.90
Ind.Harbor,Ind. I-2	5.675
Ind.Harbor,Ind. Y1	*6.40*
Irvin,Pa. U5	5.90
Lackawanna(35) B2	*5.90*
Munhall,Pa. U5	5.90
Pittsburgh J5	5.90
Sharon,Pa. S3	*5.90*
So.Chicago,Ill. U5	5.90
SparrowsPoint(38) B2	*5.90*
Warren,O. R2	*5.90*
Weirton,W.Va. W6	*6.175*
Youngstown U5	5.90
Youngstown Y1	*6.40*

SHEETS, Cold-Rolled Steel (Commercial Quality)

Butler,Pa. A10	4.775
Cleveland J5, R2	*4.775*
Ecorse,Mich. G5	*4.975*
Fairfield,Ala. T2	4.775
Follansbee,W.Va. F4	*5.775*
Fontana,Calif. K1	*5.875*
Gary,Ind. U5	4.775
GraniteCity,Ill. G4	*5.475*
Ind.Harbor,Ind. I-2, Y1	*4.775*
Irvin,Pa. U5	4.775
Lackawanna,N.Y. B2	4.775
Middletown,O. A10	4.775
Pittsburg,Calif. C11	5.725
Pittsburgh J5	4.775
SparrowsPoint,Md. B2	4.775
Steubenville,O. W10	4.575
Warren,O. R2	*4.775*
Weirton,W.Va. W6	*4.775*
WestLeechburg,Pa. A4	5.45
Youngstown Y1	*4.775*

SHEETS, Gal'd No. 10 Steel

AlabamaCity,Ala. R2	*5.275*
Ashland,Ky.(8) A10	5.275
Canton,O. R2	*5.275*
Delphos,O. N16	5.675
Dover,O. R1	5.475
Fairfield,Ala. T2	5.275
Gary,Ind. U5	5.275
GraniteCity,Ill. G4	*5.475*
Ind.Harbor,Ind. I-2	5.075
Irvin,Pa. U5	5.275
Kokomo,Ind.(13) C16	*5.925*
MartinsFerry,O. W10	5.075
Niles,O. N12	6.275
Pittsburg,Calif. C11	6.025
SparrowsPoint,Md. B2	*5.275*
Steubenville,O. W10	5.075
Torrance,Calif. C11	6.025
Weirton,W.Va. W6	*5.275*

SHEETS, Galvanized No. 10, High-Strength Low-Alloy

Irvin,Pa. U5	7.625
SparrowsPoint(39) B2	*8.075*

SHEETS, Galvannealed Steel

Canton,O. R2	*5.825*
Irvin,Pa. U5	5.825
Kokomo,Ind.(13) C16	*5.975*
Niles,O. N12	6.825

SHEETS ZINCGRIP STEEL

Butler,Pa. A10	5.525
Middletown,O. A10	5.525

SHEETS, Electro Galvanized

Cleveland R2 (28)	*6.125*
Niles,O. P2 (28)	*6.175*
Weirton,W.Va. W6	5.775

SHEETS, Well Casing

Fontana,Calif. K1	5.34

BLUED Stock, 29 ga.

Yorkville,O. W10	7.00
Follansbee,W.Va. F4	*7.30*
Follansbee (25) F4	*7.175*

SHEETS, Enameling Iron

Ashland,Ky.(8) A10	5.175
Cleveland R2	*5.175*
Gary,Ind. U5	5.175
GraniteCity,Ill. G4	*5.875*
Ind.Harbor,Ind. I-2	5.175
Irvin,Pa. U5	5.175
Middletown,O. A10	5.175
Youngstown Y1	*5.175*

BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$6.50
Fairfield,Ala. T2	6.60
Gary,Ind. U5	6.50
GraniteCity,Ill. G4	6.70
Ind.Harbor,Ind. I-2,Y1	6.50
Irvin,Pa. U5	6.50
Niles,O. R2	6.50
Pittsburg,Calif. C11	7.25
SparrowsPoint,Md. B2	6.60
Warren,O. R2	6.50
Weirton,W.Va. W6	6.50
Yorkville,O. W10	6.50

HOLLOWARE ENAMELING Black Plate (29 gage)

Follansbee,W.Va. F4	6.10
Gary,Ind. U5	6.10
GraniteCity,Ill. G4	6.30
Ind.Harbor,Ind. Y1	6.10
Irvin,Pa. U5	6.10
Yorkville,O. W10	6.30

SHEETS, Culvert	Cu	Cu
No. 16	Alloy	Fe
Ashland,Ky. A10	*6.525*	
Canton,O. R2	*6.475*	*6.925*
Fairfield,Ala. T2	5.875	6.125
Gary,Ind. U5	5.875	6.125
Ind.Harbor I-2	5.875	6.125
Irvin,Pa. U5	5.875	6.125
Kokomo,Ind. C16	6.525	....
MartinsFy.,O.W10	5.875	....
Pittsburg,Cal.C11	6.625	....
SparrowsPt. B2	*6.075*	....
Torrance,Calif.C11	*6.625*	....

SHEETS, Culvert, No. 16 Pure Iron

Ashland,Ky. A10	*6.575*
Fairfield,Ala. T2	6.125
MartinsFerry,O. W10	6.125

SHEETS, Hot-Rolled Ingot Iron 18 Gage and Heavier

Ashland,Ky.(8) A10	*4.175*
Cleveland R2	*4.525*
Ind.Harbor,Ind. I-2	4.175
Warren,O. R2	*4.525*

SHEETS, Cold-Rolled Ingot Iron

Butler,Pa. A10	*5.275*
Cleveland R2	*5.375*
Middletown,O. A10	*5.275*
Warren,O. R2	*5.375*

SHEETS, Galvanized Ingot Iron No. 10 flat

Ashland,Ky.(8) A10	5.325
Canton,O. R2	*6.025*

SHEETS, ZINCGRIP Ingot Iron

Butler,Pa. A10	*5.275*
Middletown,O. A10	*5.275*

SHEETS, ALUMINIZED

Butler,Pa. A10	*8.625*

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10	*6.075*

MANUFACTURING TERNES (Special Coated)

Fairfield,Ala. T2	$7.85
Gary,Ind. U5	7.75
Irvin,Pa. U5	7.75
Yorkville,O. W10	7.75

SHEETS, LT. Coated Ternes, 6 lb

Yorkville,O. W10	$8.65

SHEETS, Mfg. Ternes, 8 lb (Commercial Quality)

Gary,Ind. U5	$9.75
Yorkville,O. W10	9.75

SHEETS, Long Terne Steel (Commercial Quality)

BeechBottom,W.Va. W10	6.475
Gary,Ind. U5	5.675
Mansfield,O. E6	6.65
Middletown,O. A10	5.675
Niles,O. N12	6.275
Weirton,W.Va. W6	*5.675*

ROOFING SHORT TERNES (8 lb Coated)

Gary,Ind. U5	9.75

TIN PLATE, American 1.25 1.50 Coke (Base Box) lb lb

Aliquippa,Pa. J5	$8.70	$8.95
Fairfield,Ala. T2	8.80	9.05
Gary,Ind. U5	8.70	8.95
Ind.Har. I-2, Y1	8.70	8.95
Irvin,Pa. U5	8.70	8.95
Pitts.,Cal. C11	9.45	9.70
Sp.Pt.,Md. B2	8.80	9.05
Warren,O. R2	8.70	...
Weirton,W.Va.W6	8.70	8.95
Yorkville,O. W10	8.70	8.95

STRIP, Hot-Rolled High-Strength Low-Alloy

Bessemer,Ala. T2	5.65
Conshohocken,Pa. A3	*6.20*
Ecorse,Mich. G5	*6.50*
Fairfield,Ala. T2	5.65
Fontana,Calif. K1	*7.05*
Gary,Ind. U5	5.65
Ind.Harbor,Ind. I-2	5.65
Ind.Harbor,Ind. Y1	*6.45*
Lackawanna,N.Y. B2	*6.00*
LosAngeles(25) B3	6.40
Seattle(25) B3	6.65
Sharon,Pa. S3	*5.95*
So.SanFrancisco(25)B3	6.40
SparrowsPoint,Md. B2	*6.00*
Warren,O. R2	*5.95*
Weirton,W.Va. W6	*6.30*
Youngstown Y1	*6.45*
Youngstown U5	5.65

STRIP, Cold-Rolled High-Strength Low-Alloy

Cleveland J5	*7.80*
Cleveland A7	*8.15*
Dover,O. G6	8.00
Ecorse,Mich. G5	*8.50*
Lackawanna,N.Y. B2	*8.425*
Sharon,Pa. S3	*7.65*
SparrowsPoint,Md.	*8.425*
Warren,O. R2	*7.60*
Weirton,W.Va. W6	*8.30*
Youngstown Y1	*8.30*

STRIP, Cold-Rolled Alloy Steel

Bridgeprt,Conn.(10) S15	12.15
Carnegie,Pa. S18	12.00
Cleveland A7	11.40
Dover,O. G6	*12.00*
Fontana,Calif. K1	*13.65*
Harrison,N.J. C18	12.00
Midland,Pa. C18	12.00
NewBritn,Conn.(10) S15	12.15
Pawtucket,R.I.(11) N8	12.15
Pawtucket,R.I.(12) N8	12.45
Sharon,Pa. S3	12.00
Worcester,Mass. A7	11.70
Youngstown C8	12.00

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	*4.175*
Warren,O. R2	*4.525*

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	*6.05*

TIN PLATE, Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$7.40	$7.65	$8.05
Fairfield,Ala. T2	7.50	7.75	8.15
Gary,Ind. U5	7.40	7.65	8.05
GraniteCity,Ill. G4	7.60	7.85	8.25
IndianaHarbor,Ind. I-2, Y1	7.40	7.65	8.05
Irvin,Pa. U5	7.40	7.65	8.05
Niles,O. R2	7.40	...	...
Pittsburg,Calif. C11	8.15	8.40	8.80
SparrowsPoint,Md. B2	7.50	7.75	8.15
Weirton,W.Va. W6	7.40	7.65	8.05
Yorkville,O. W10	7.40	7.65	8.05

SHEETS, SILICON, H.R. or C.R.(22 Ga.) COILS (Cut lengths ½c lower)	Field	Armature	Electric	Motor	Dynamo
BeechBottom W10 (cut lengths)	...	...	7.85	9.10	9.90
Brackenridge,Pa. A4	...	...	8.35	9.60	10.40
GraniteCity,Ill. G4 (cut lengths)	...	...	8.55	9.80	....
IndianaHarbor,Ind. I-2	8.05	8.35	8.85	(34)	....
Mansfield,O. E6 (cut lengths)	7.20	7.35	7.85	9.10	9.90
Newport,Ky. N9 (cut lengths)	...	*7.85*	*8.35*	*9.60*	*10.40*
Niles,O. N12 (cut lengths)	7.05	7.35	7.85	...	....
Vandergrift,Pa. U5	...	...	8.85	...	....
Warren,O. R2	*8.05*	*8.35*	*8.85*	*10.10*	*10.90*
Zanesville,O. A10	...	*8.35*	*8.85*	*10.10*	*10.90*

SHEETS, SILICON (22 Ga. Base) COILS (Cut Lengths ½c lower)

Transformer Grade	72	65	58	52
BeechBottom W10 (cut lengths)	10.45	11.00	11.70	12.50
Brackenridge,Pa. A4	10.95	....	....	....
Newport,Ky. N9 (cut lengths)	*10.95*	....	....	....
Vandergrift,Pa. U5	10.95	11.50	12.20	13.00
Warren,O. R2	*11.45*			
Zanesville,O. A10	*11.45*	*12.00*	*12.70*	*13.50*

H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)

	T-100	T-90	T-80	T-73
Butler,Pa. A10 (C.R.)			*16.05*	*16.55*
Vandergrift,Pa. U5	13.50	14.35	15.35	15.85

STRIP, Cold-Finished, Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Beren,O. C7	...	6.80	7.40	9.35	11.65
Bridgeport,Conn.(10) S15	5.80	7.65	8.25	10.20	12.50
Bristol,Conn. W1	...	...	8.55	10.50	....
Carnegie,Pa. S18	...	7.65	8.25	10.20	12.50
Cleveland A7	5.10	7.30	8.25	10.20	12.50
Dearborn,Mich. D3	*6.05*	*8.25*	*8.85*		
Detroit D2	*6.45*	*7.85*	*8.45*	*10.55*	
Dover,O. G6	*6.05*	*8.00*	*8.60*	*10.55*	*12.85*
FranklinPark,Ill. T6	5.45	7.45	8.40	10.35	12.65
Harrison,N.J. C18	...	...	8.55	10.50	12.80
Mattapan,Mass. T6	5.95	7.60	8.55	10.50	12.80
NewBritn.,Conn.(10) S15	5.80	7.65	8.25	10.20	12.50
NewCastle,Pa. B4	*5.80*	*8.00*	*8.60*		
NewCastle,Pa. E5	6.80	7.65	8.25	10.20	12.50
NewHaven,Conn. D2	*6.70*	*7.95*	*8.55*	*10.50*	
NewYork W3	...	7.95	8.55	10.50	12.80
Pawtucket,R.I. N8:					
Cleve.orPitts.Base	...	7.65	8.25	10.20	12.50
Worcester,Mass.,Base	5.80	7.95	8.55	10.50	12.80
Sharon,Pa. S3	*5.80*	*8.00*	*8.60*	*10.55*	*12.85*
Trenton,N.J. R5	...	7.95	8.55	10.50	12.80
Wallingford,Conn. W2	5.35	7.60	8.20	10.15	12.65
Warren,O. T5	6.20	7.65	8.25	10.20	12.50
Weirton,W.Va. W6	*5.80*	*8.00*	*8.60*	*10.55*	*12.85*
Worcester,Mass. A7	5.40	7.60	8.55	10.50	12.80
Worcester,Mass. T6	5.95	7.60	8.55	10.50	12.80
Youngstown C8	...	7.65	8.25	10.20	12.50

Spring Steel (Tempered)				
Trenton,N.J. R5	...	...	11.875	14.075	16.925
Harrison,N.J. C18	...	...	10.30	12.50	15.35
New York W3	...	...	10.30*	12.50*	15.35*
Youngstown C8	...	...	10.30	12.50	15.35

* Plus $1.575 per 100 lb.

M1 McLouth Steel Corp.	
M4 Mahoning Valley Steel	
M5 Medart Co.	
M6 Mercer Tube & Mfg. Co.	
M8 Mid-States Steel & Wire	
M12 Moltrup Steel Products	
M13 Monarch Steel Co.	
M16 Md. Fine & Specia) Wire	
M17 Metal Forming Corp.	
N2 National Supply Co.	
N3 National Tube Div.	
N5 Nelsen Steel & Wire Co.	
N6 NewEng.HighCarb.Wire	
N8 Newman-Crosby Steel	
N9 Newport Steel Corp.	
N12 Niles Rolling Mill Div.	
N14 Nrthwst. Steel Roll. Mills	
N15 Northwestern S.&W. Co.	
N16 New Delphos Mfg. Co.	
O3 Oliver Iron & Steel Corp.	
O4 Oregon Steel Mills	
P1 Pacific States Steel Corp.	
P2 Pacific Tube Co.	
P4 Phoenix Iron & Steel Co.	
P5 Pilgrim Drawn Steel	
P6 Pittsburgh Coke & Chem.	
P7 Pittsburgh Steel Co.	
P9 Pittsburgh Tube Co.	
P11 Pollak Steel Co.	
P12 Portsmouth Division Detroit Steel Corp.	
P13 Precision Drawn Steel	
P14 Pitts. Screw & Bolt Co.	
P15 Pittsburgh Metallurgical	
P16 Page Steel & Wire Div., Amer. Chain & Cable	
P17 Plymouth Steel Co.	
R1 Reeves Steel & Mfg. Co.	
R2 Republic Steel Corp.	
R5 Rhode Island Steel Corp.	
R6 Roebling's Sons, John A.	
R6 Rome Strip Steel Co.	
R7 Rotary Electric Steel Co.	
R8 RellanceDiv..EatonMfg.	
R9 Rome Mfg. Co.	
S1 Seneca Wire & Mfg. Co.	
S3 Sharon Steel Corp.	
S4 Sharon Tube Co.	
S5 Sheffield Steel Corp.	
S6 Shenango Furnace Co.	
S7 Simmons Co.	
S8 Simonds Saw & Steel Co.	
S9 Sloss-Sheffield S.&I.Div.	
S13 Standard Forgings Corp.	
S14 Standard Tube Co.	
S15 Stanley Works	
S16 Struthers Iron & Steel	
S17 Superior Drawn Steel Co.	
S18 Superior Steel Corp.	
S19 Sweet's Steel Co.	
S20 Southern States Steel	
S24 Seidelhuber Steel	
S25 Stainless Welded Products	
S26 Specialty Wire Co. Inc.	
T2 Tenn. Coal & Iron Div.	
T3 Tenn. Prod. & Chem.	
T4 Texas Steel Co.	
T5 Thomas Strip Division, Pittsburgh Steel Co.	
T6 Thompson Wire Co.	
T7 Timken Roller Bearing	
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.	
T13 Tube Methods Inc.	
U4 Universal-Cyclops Steel	
U5 United States Steel Corp.	
V2 Vanadium-Alloys Steel	
V3 Vulcan Crucible Steel Co.	
W1 Wallace Barnes Co.	
W2 Wallingford Steel Co.	
W3 Washburn Wire Co.	
W4 Washington Steel Corp.	
W6 Weirton Steel Co.	
W7 W. Va. Steel & Mfg. Co.	
W8 West.Auto.Mach.Screw	
W9 Wheatland Tube Co.	
W10 Wheeling Steel Corp.	
W12 Wickwire Spencer Steel Div.,Colo. Fuel & Iron	
W13 Wilson Steel & Wire Co.	
W14 Wisconsin Steel Div., International Harvester	
W15 Woodward Iron Co.	
W18 Wyckoff Steel Co.	
Y1 Youngstown Sheet&Tube	

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(28) R2	*3.925*
Alton,Ill. L1	4.20
Ashland,Ky.(8) A10	3.925
Atlanta A11	*4.475*
Bessemer,Ala. T2	3.925
Bridgeport,Con.(10)S15	4.225
Buffalo(27) R2	*3.925*
Butler,Pa. A10	3.925
Carnegie,Pa. S18	4.225
Conshohocken,Pa. A3	4.325
Detroit M1	4.40
Ecorse,Mich. G5	*4.225*
Fairfield,Ala. T2	3.925
Fontana,Calif. K1	*5.375*
Gary,Ind. U5	3.925
Houston,Tex. S5	4.125
Ind.Harbor,Ind. I-2	3.925
Johnstown,Pa.(25) B2	*3.925*
KansasCity,Mo.(9) S5	4.325
Lackaw'na,N.Y.(32) B2	*3.925*
LosAngeles(25) B3	*4.675*
Milton,Pa. B6	4.35
Minnequa,Colo. C19	4.775
NewBritian(10) S15	4.225
N.Tonawanda,N.Y.B11	3.725
Pittsburg,Calif. C11	4.675
Riverdale,Ill. A1	3.925
SanFrancisco S7	5.00
Seattle(25) B3	*4.925*
Seattle N14	*4.925*
Sharon,Pa. S3	4.225
So.Chicago,Ill. W14	*3.925*
So.SanFrancisco(25) B3	*4.675*
SparrowsPoint,Md. B2	*3.925*
Torrance,Calif. C11	4.675
Warren,O. R2	*3.925*
Weirton,W.Va. W6	*4.025*
WestLeechburg,Pa. A4	3.975
Youngstown Y1, U5	*3.925*

STRIP, Hot-Rolled Alloy

Bridgeport,Conn.(10)S15	6.05
Carnegie,Pa. S18	6.45
Fontana,Calif. K1	*7.80*
Gary,Ind. U5	6.40
Houston,Tex. S5	6.50
KansasCity,Mo. S5	6.70
LosAngeles B3	*7.60*
Midland,Pa. C18	5.85
NewBritn.,Conn(10)S15	6.05
Sharon,Pa. S3	6.45
So.Chicago, W14	*6.40*
Youngstown U5	6.40

STRIP, Cold-Rolled Carbon

Anderson,Ind.(40) G6	*5.80*
Bridgeprt,Conn.(10)S15	5.80
Butler,Pa. A10	5.45
Cleveland A7, J5	5.45
Dearborn,Mich. D3	6.05
Detroit D2	*5.95*
Detroit M1	5.45
Dover,O.(40) G6	5.80
Ecorse,Mich. G5	*5.65*
Follansbee,W.Va. F4	*5.45*
Fontana,Calif. K1	*7.35*
FranklinPark,Ill.(40)T6	5.35
Ind.Harbor,Ind. I-2	5.70
Lackawanna,N.Y. B2	*5.45*
LosAngeles C1	7.15
Mattapan,Mass. T6	5.95
Middletown,O. A10	5.45
NewBritain(10) S15	5.80
NewCastle,Pa.(14) B4	*5.45*
NewCastle,Pa.(40) E5	5.70
NewHaven,Conn. A7	5.95
NewHaven,Conn. D2	*6.20*
Pawtucket,R.I. R3	6.45
Pawtucket,R.I.(21) N8	6.30
Riverdale,Ill.(40) A1	5.70
Rome,N.Y.(29) R6	*5.45*
Sharon,Pa. S3	5.80
SparrowsPoint,Md. B2	*5.45*
TrentonN.J. R5	6.45
Wallingford,Conn. W2	6.30
Warren,O.(40) T5	5.70
Warren,O. R2	*5.45*
Weirton,W.Va. W6	*5.45*
Youngstown C8 (40)	5.70
Youngstown Y1	*5.45*

STRIP, Electro Galvanized

Dover,O. G6	*5.70*
Warren,O. T5	5.70
Weirton,W.Va. W6	5.10
Youngstown C8	5.70

TIGHT COOPERAGE HOOP

Atlanta A11	*4.65*
Riverdale,Ill. A1	*4.50*
Sharon,Pa. S3	4.55
Youngstown U5	4.15

ROPE WIRE

Alton,Ill. L1	9.30
Bartonville,Ill. K4	8.95
Buffalo W12 (43)	8.55
Fostoria,O. S1 (43)	8.85
Johnstown,Pa. B2	*9.35*
Monessen,Pa. P16 (43)	8.55
Monessen,Pa. P7 (43)	8.80
Muncie,Ind. I-7	*9.55*
Palmer,Mass. W12 (43)	8.85
Portsmouth,O. P12	*9.35*
Roebling,N.J. R5	9.25
SparrowsPt. B2	*9.45*
Struthers,O. Y1	*9.35*
Worcester J4, T6 (43)	8.85

(A) Plow and Mild Plow; add 0.25c for improved plow.

WIRE, Merchant Quality

	An'ld.	Galv.
(6 to 8 gage)		
AlabamaCity B2	*6.675*	*7.075*
Aliquippa J5	6.075	6.525‡
Atlanta A11	*6.925*	*7.475*
Bartonville(19)K4	6.075	6.40
Buffalo W12	5.225	
Cleveland A7	6.675	
CrawfordsvilleM8	6.175	6.475
Donora,Pa. A7	6.675	7.075
Duluth,Minn. A7	6.675	7.075
Fairfield T2	6.675	7.075
Houston,Tex. S5	6.475	6.80
Johnstown B2	*6.675*	*7.225*
Joliet,Ill A7	6.675	7.075
KansasCy.,Mo. S5	6.675	7.00
Kokomo C16	*6.775*	*7.175*
LosAngeles B3	*7.625*	
Minnequa C10	6.325	6.70*
Monessen P7	6.075	6.45
Palmer W12	5.525	
Pitts.,Calif. C11	7.625	8.025
Prtsmth.(18)P12	*6.575*	
Rankin A7	6.675	7.075
So.Chicago R2	6.075	6.325
So.S.Fran. C10	7.025	7.40*
SparrowsPt. B2	*6.175*	*7.325*
Sterl'g(1)(48)N15	*6.675*	*7.225*
Struthers,O. Y1	*6.675*	*7.175*
Worcester A7	6.975	

*Based on 14c zinc; †14.50c zinc; ‡17.5c zinc.

WIRE (16 gage)	**An'ld. Galv. Stone**	**Stone**
(Add 4.7% on base and extras)		
Aliquippa J5	10.15	12.15
Bartonville(19)K4	10.25	12.00*
Cleveland A7	12.00	13.55
Crawfrdsville M8	10.73	12.51
Fostoria,O. S1	10.40	13.00
Johnstown B2	10.73	12.58‡
Kokomo C16	*12.60†*	*14.15‡*
Minnequa C10	10.40	12.425*
Palmer,Mass. W12	10.25	12.15
Pitts.,Calif. C11	12.35	13.90
SparrowsPt. B2	10.85	12.68‡
Sterling(1) N15	10.73‡	12.15†
Waukegan A7	12.00	13.55
Worcester A7	12.30	13.85

*Based on 14c zinc; $14.50c zinc. †Includes 4.7% increase.

WIRE, Manufacturers Bright, Low Carbon

Alabamat'city,Ala. R2	*5.525*
Aliquippa,Pa. J5	*5.525*
Atlanta A11	5.475
Alton,Ill L1	5.45
Bartonville,Ill. K4	5.325
Buffalo W12	5.225
Chicago W13	*5.525*
Cleveland A7, C20	*5.525*
Crawfordsville,Ind. M8	5.325
Donora,Pa. A7	5.525
Duluth,Minn. A7	5.525
Fairfield,Ala. T2	5.525
Fostoria,O. (24) S1	5.725
Houston S5	5.625
Johnstown,Pa. B2	*5.525*
Joliet,Ill. A7	5.525
KansasCity,Mo. S5	5.825
Kokomo,Ind. C16	*5.625*
LosAngeles B3	*6.475*
Minnequa,Colo. C10	5.475
Monessen,Pa. P7	5.475
Newark 6-8 ga I-1	5.88
No.Tonawanda B11	5.225
Palmer,Mass. W12	5.525
Pittsburg,Calif. C11	6.475
Portsmouth,O. P12	*5.725*
Rankin,Pa. A7	5.525
So.Chicago,Ill. R2	*5.525*
So.SanFrancisco C10	6.175
SparrowsPoint,Md. B2	*5.625*
Sterling,Ill. (1) N15	*5.525*
Struthers,O. Y1	*5.525*
Waukegan,Ill. A7	5.525
Worcester,Mass. A7	5.825

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	*7.45*
Buffalo W12 (43)	6.35
Cleveland A7	6.95
Crawf'sville,Ind.M8(43)	6.70
Dover,O. G6	*7.45*
Fostoria,O. S1 (43)	6.00
Kokomo,Ind. C16	*7.55*
FranklinPark,Ill. T6(43)	6.20
Massillon,O. R8	*6.95*
Monessen,Pa. P16 (43)	6.35
Monessen,Pa. P7 (43)	6.10
Pawtkt.R.I.(12) N8 (43)	6.85
TrentonN.J. R5 (43)	7.25
Worcester,Mass. A7	7.25
Worcester,Mass. T6 (43)	6.50
Worcester,Mass.W12(43)	6.65

WIRE, Galv'd ACSR for Cores

Bartonville,Ill. K4	8.90
Monessen,Pa. P16 (43)	8.50
Muncie,Ind. I-7	*9.70*
Roebling,N.J. R5	9.30
SparrowsPt.,Md. B2	*9.60*
Johnstown,Pa. B2	*9.50*

WIRE, MB Spring, High Carbon

Aliquippa,Pa. J5	*6.925*
Alton,Ill. L1	6.75
Bartonville,Ill. K4	6.64
Buffalo W12 (43)	6.25
Cleveland A7	6.925
Donora,Pa. A7	6.925
Duluth,Minn. A7	6.925
Fostoria,O. S1 (43)	6.25
Johnstown,Pa. B2	*6.925*
Millbury (12) N8 (43)	8.05
Minnequa,Colo. C10(43)	6.50
Monessen,Pa. P7 (43)	6.25
Monessen,Pa. P16	6.75
Muncie,Ind. I-7	*7.425*
Palmer, Mass. W12 (43)	6.55
Pittsburg,Calif. C11	7.875
Roebling,N.J. R5	6.85
Portsmouth,O. P12	*6.925*
So.Chicago,Ill. R2	*6.925*
So.SanFran. C10 (43)	7.20
SparrowsPt.,Md. B2	*7.025*
Struthers,O. Y1	*6.925*
Trenton,N.J. A7	7.225
Waukegan,Ill A7	6.925
Worcester A7	7.225
Worcester, T6, W12 (43)	6.55
Worcester,Mass. J4 (43)	6.75

WIRE, Upholstery Spring

Aliquippa,Pa. J5	*6.625*
Alton,Ill. L1	6.50
Buffalo W12	6.275
Cleveland A7	6.625
Donora,Pa. A7	6.625
Duluth,Minn. A7	6.625
Johnstown,Pa. B2	*6.625*
LosAngeles B3	*7.575*
Minnequa,Colo. C10	6.525
Monessen,Pa. P7	6.275
Monessen,Pa. P16(42)	6.40
NewHaven,Conn. A7	6.925
Palmer,Mass. W12	6.575
Pittsburg,Calif. C11	7.575
Portsmouth,O. P12	*6.625*
Roebling,N.J. R5	6.575
So.Chicago,Ill. R2	6.275
So.SanFrancisco C10	7.225
SparrowsPoint,Md. B2	*6.725*
Trenton,N.J. A7	6.925
Waukegan,Ill.. A7	6.625
Worcester,Mass. A7	6.925

WIRE, Fine & Weaving (8"Coils)

Alton,Ill. L1 (43)	**9.20**
Bartonville,Ill. K4	**9.42**
Buffalo W12 (43)	**8.90**
Chicago W13	*10.05*
Cleveland A7	10.05
Crawf'sville,Ind. M8(43)	**8.90**
Fostoria,O. S1 (43))	**8.90**
Johnstown,Pa. B2 (43)	**8.90**
Kokomo,Ind. C16	*10.55*
Monessen,Pa. P16 (43)	**8.90**
Muncie,Ind. I-7	*10.25*
Palmer,Mass. W12 (43)	**9.20**
Roebling,N.J. R5	10.35
Waukegan,Ill. A7	10.05
Worcester,Mass. A7	10.35
Worcester,Mass. T6(43)	9.20

WIRE, Tire Bead

Bartonville,Ill. K4	**11.51**
Monessen,Pa. P16 (43)	**11.40**
Roebling,N.J. R5	12.30

WOVEN FENCE, 9-15½ Ga. Col.

AlabamaCity,Ala. R2	*140*
Ala.City,Ala. 17-18ga.R2	222
Aliqu'pa,Pa.9-14½ga.J5	139†
Atlanta A11	*146*
Bartonville,Ill.(19) K4	137
Crawfordsville,Ind M8	138
Donora,Pa. A7	140
Duluth,Minn. A7	140
Fairfield,Ala. T2	140
Houston,Tex. S5	145
Johnstown,Pa. B2	*143*
Johnstown 17ga.,6" B2	*234*
Johnstown, 4"	*237*
Joliet,Ill. A7	140
KansasCity,Mo. S5	149
Kokomo,Ind. C16	*142*
Minnequa,Colo. C10	146*
Monessen,Pa. P7	138
Pittsburg,Calif. C11	163
Rankin,Pa. A7	140
So.Chicago,Ill. R2	*140*
Sterling,Ill. (1) N15	*143*

*On 14c zinc; ‡17.5c zinc.

FENCE POSTS	**Col.**
ChicagoHts.,Ill. C2, I-2	145
Duluth,Minn. A7 (49)	136
Franklin,Pa. P5	145
Huntington W.Va. W7	145
Johnstown,Pa. B2	148
Marion,O. P11	140
Minnequa,Colo. C10	138
Moline,Ill. R2	136
So.Chicago,Ill R2	140
Tonawanda,N.Y. B12	148
Williamsport Pa. S19	158

WIRE, Barbed

AlabamaCity,Ala. R2	*153*
Aliquippa,Pa. J5	148‡
Atlanta A11 (5)	*$7.02*
Bartonville,Ind.(19) K4	146
Crawfordsville,Ind MS	147
Donora,Pa. A7	153
Duluth,Minn A7	153
Fairfield,Ala. T2	153
Houston,Tex. S5	154
Johnstown,Pa. B2	*156*
Joliet,Ill. A7	153
KansasCity,Mo. S5	158
Kokomo,Ind. C16	*155*
Minnequa,Colo. C10	153*
Monessen,Pa. P7	147
Pittsburg,Calif. C11	173
Rankin,Pa. A7	153
S.oChicago,Ill. R2	*151*
So.SanFran.,Calif. C10	167*
SparrowsPoint,Md. B2	*158*
Sterling,Ill.(1) N15	*156*

*On 14c zinc; ‡17.5c zinc.

BALE TIES, Single Loop

AlabamaCity,Ala. R2	*149*
Atlanta A11	*152*
Bartonville,Ill.(19) K4	132
Crawfordsville,Ind. M8	132
Donora,Pa. A7	149
Duluth,Minn. A7	149
Fairfield,Ala. T2	149
Joliet,Ill. A7	149
KansasCity,Mo. S5	144
Kokomo,Ind. C16	*151*
Minnequa,Colo. C10	137
Pittsburg,Calif. C11	173
So.Chicago,Ill. R2	*149*
So.SanFran.,Calif. C10	156
SparrowsPoint,Md. B2	*151*
Sterling,Ill.(1) N15	*149*

NAILS, Stock

To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2	*141*
Aliquippa,Pa J5	127
Atlanta A11	*134*
Bartonville,Ill. (19) K4	127
Chicago,Ill. W13	*131*
Cleveland A9	*137*
Crawfordsville,Ind. M8	127
Donora,Pa. A7	131
Duluth,Minn. A7	131
Fairfield,Ala. T2	131
Galveston,Tex. D7	135
Houston,Tex. S5	135
Johnstown,Pa. B2	*131*
Joliet, Ill. A7	131
KansasCity,Mo. S5	139
Kokomo,Ind. C16	*133*
Minnequa,Colo. C10(44)	123
Monessen,Pa. P7	127
Pittsburg,Calif. C11	150
Portsmouth,O. P12	132
Rankin,Pa. A7	131
So.Chicago,Ill. R2	*131*
SparrowsPt.,Md. B2	*133*
Sterling,Ill. (1) N15	*131*
Worcester,Mass. A7	137

NAILS, Cut (100 lb keg.) to dealers (33)

Conshohocken,Pa. A3	*$8.00*

RAILS	**Std. No. 1**	**Std. No. 2**	**All No. 2**	**Std. Tee Rails 60 lb Under**
Bessemer,Pa. U5	4.325	4.225	4.275	5.20
Ensley,Ala. T2	4.325	4.225	....	5.20
Fairfield,Ala. T2	....	....	....	5.20
Gary,Ind. U5	4.325	4.225	4.275	....
Huntington,W.Va. W7	....	....	....	5.00
IndianaHarbor,Ind. I-2	4.325	4.225	4.275	....
Johnstown,Pa. B2	....	....	....(16)	5.00
Lackawanna,N.Y. B2	4.325	....	....	....
Minnequa,Colo. C10	4.075	3.975	....	5.05
Steelton,Pa. B2	*4.325*	*4.225*	....	....
Williamsport,Pa. S19	....	....	....	5.00

TOOL STEEL

(Prices subject to 4.7% increase)

Grade	$ per lb
Regular Carbon	0.230
Extra Carbon	0.270
Special Carbon	0.325
Oil Hardening	0.350
5% Cr Hot Work	0.350
Hi-Carbon-Cr	0.635

Grade by Analysis

W	Cr	V	Co	
18	4	1	....	1.505
18	4	2	....	1.65-1.66
20.25	4.25	1.6	12.25	3.535-3.675
19	4	2	7	2.460
18.25	4.25	1	4.75	2.125
18	4	2	9	2.445-2.45
13.5	4	3	....	1.6025
9	3.25	0.5	....	1.01

W	Cr	V	Mo	
6.4	4.5	1.9	5	0.96-0.965
6	4	3	6	1.190
1.5	4	1	8.5	0.810

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, J3, L3, M14, S8, U4, V2 and V3.

FOOTNOTES

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) Per 80 rod spool; 4 pt.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass. base.
(13) Add 0.25c for 17 Ga. & heavier
(14) 0.143-0.249"; add 0.25c for gages 0.142 and lighter.
(15) ⅛" and thinner.
(16) 40 lb and under.
(17) Flats only.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) 0.25c off for untreated.
(21) New Haven, Conn., base.
(22) Del. San Francisco Bay area.
(23) 20 Ga. 36" wide.
(24) Deduct 0.20c, finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing mill lengths, to fabricators; to consumers, 5.05c
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; add 0.35c for universal mill.
(31) Not annealed.
(32) Rd. or square edge.
(33) To jobbers, deduct 20c
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 15 gage & lighter; 60" & narrower.
(38) 14 gage & lighter; 48" and narrower.
(39) 48" and narrower.
(40) Lighter than 0.035".
(43) Plus 4.7% on base and extras.
(44) Plus 45c per 100 lb.
(45) Plus 40c per 100 lb
(46) Plus 2.2 per cent.
(48) 6-7 gage.
(49) U-post; add 2 cols. for T-post.

BUTTWELD STANDARD PIPE, T & C

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼		1½		2		2½		3	
List Per Ft.	8.5c		11.5c		17c		23c		27.5c		37c		58.5c		76.5c							
Pounds Per Ft.	0.85		1.13		1.68		2.28		2.73		3.68		5.82		7.62							
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (††)	*26.25*	*10*	*29.25*	*14*	*31.75*	*17.5*	*34.25*	*18.5*	*34.75*	*19.5*	*35.25*	*20*	*36.75*	*20*	*36.75*	*20*						
Alton, Ill. L1 (††)	*23.25*	*7*	*26.25*	*11*	*28.75*	*14.5*	*31.25*	*15.5*	*31.75*	*16.5*	*32.25*	*17*	*33.75*	*17*	*33.75*	*17*						
Benwood, W. Va. W10	32.5	13.25	35.5	17.25	38	20.75	38.5	20.5	39	21.5	39.5	22	40	21.75	40	21.75						
Etna, Pa. N2 (†)	28.75	9.50	31.75	13.50	34.25	17	36.75	18.75	37.25	19.75	37.75	20.25	39.25	21	39.25	21						
Fontana, Calif. K1 (††)	*13.25*	*+2*	*16.25*	*1*	*19.25*	*4.5*	*21.25*	*5.5*	*21.75*	*6.5*	*22.25*	*7*	*23.75*	*7*	*23.75*	*7*						
Ind.Harbor, Ind. Y1 (††)	*25.25*	*9*	*28.25*	*13*	*30.75*	*16.5*	*33.25*	*17.5*	*33.75*	*18.5*	*34.25*	*19*	*35.75*	*19*	*35.75*	*19*						
Lorain, O. N3 (*)	26.25	16	29.25	20	31.75	23.5	34.25	23	34.75	24	35.25	24.5	36.75	23	36.75	23						
Sharon, Pa. M6	32.5	16.25	35.5	20.25	38	23.75	38.5	22.75	39	23.75	39.5	24.25	40	23.25	40	23.25						
Sparrows Pt., Md. B2	30.5	11.25	33.5	15.25	36	18.75	36.5	18.5	37	19.5	37.5	20	38	19.75	38	19.75						
Youngstown R2 (**)	*26.25*	*10*	*29.25*	*14*	*31.75*	*17.5*	*34.25*	*18.5*	*34.75*	*19.5*	*35.25*	*20*	*36.75*	*20*	*36.75*	*20*						
Youngstown Y1 (††)	*26.25*	*10.00*	*29.25*	*14.00*	*31.75*	*17.50*	*34.25*	*18.50*	*34.75*	*19.50*	*35.25*	*20.00*	*36.75*	*20.00*	*36.75*	*20.00*						
Wheatland, Pa. W9	32.5	13.25	35.5	16.25	38	18.75	38.5	19	39	19.5	39.5	20	40	20.25	40	20.25						

SEAMLESS STANDARD PIPE, T & C

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (††)	*15.75*	*list*	*19.75*	*2.5*	*22.25*	*5*	*23.75*	*6.5*	*23.75*	*6.5*	*23*	*5.75*	*25.5*	*8.25*
Ambridge, Pa. N2 (†)	18.25	..	22.25	...	24.75	....	26.25	....	26.25	....	26.00	....	28.50	....
Lorain, O. N3 (*)	*15.75*	*4.5*	*19.75*	*5.5*	*22.25*	*8*	*24.75*	*9.5*	*25.75*	*9.50*	*23*	*8.75*	*25.5*	*11.25*
Youngstown Y1 (††)	*15.75*	*list*	*19.75*	*2.50*	*22.25*	*5.00*	*23.75*	*6.50*	*23.75*	*6.50*	*23.00*	*5.75*	*25.50*	*8.25*
ELECTRIC WELD STANDARD PIPE, T & C														
Youngstown R2 (**)	*15.75*	*list*	*19.75*	*2.5*	*22.25*	*5.0*	*23.75*	*6.5*	*23.75*	*6.5*	*23.0*	*5.75*	*25.5*	*8.25*

BUTTWELD STANDARD PIPE, T & C

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1	
List Per Ft	5.5c		6c		6c		92c		$1.09			
Pounds Per Ft	0.24		0.42		0.57		9.20		10.89			
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv		
Benwood, W. Va. W10	29.5	+0.25	23.25	+3.5	17.75	+7.75	33	14.25	33	14.25		
Butler, Pa. F6 (†)	28	+1.25	22	+4.75	16	+9.5	..	....	..	....		
Etna, Pa. N2 (†)	28	+1.25	22	+4.75	16	+9.50	30.25	11.50	30.25	11.50		
Sharon, Pa. M6 (‡)	29.5	1.75	23	+2.25	18	+5.25	..	....	..	....		
Sharon, Pa. S4 (†)	28.0	1.75	22	+1.75	16	+5	..	....	..	....		
Sparrows Pt., Md. B2	28.5	+0.75	23	+3.75	18	+7.50	..	....	..	....		
Youngstown, R2 (**)							*27.75*	*10.5*	*27.75*	*10.5*		
Wheatland, Pa. W9	28.5	+0.75	23	+3.75	18	+7.50	..	....	..	....		

Galvanized pipe discounts based on zinc price of: (†), 14c; (‡), 12.50c; (**), 11.50c; (*), 5c; (††), 10.50c-11.50c; with discounts adjusted depending on price of zinc at time of shipment.

RIVETS

F.o.b. Cleveland, and/or freight equalized with Pittsburgh; f.o.b. Chicago, and/or freight equalized with Birmingham except where equalization is too great:

Structural ½-in., larger 8.50c
⅞-in. under ..... 40 off

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft., inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.	Elec. Weld C.D.
1	13	14.80	18.05–18.96	....	....
1¼	13	17.53	21.38–22.45	16.93	....
1½	13	19.37–20.34	23.63–24.81	18.16	....
1⅝	13	22.89–24.72	27.92–30.16	20.28	....
2	13	25.65–27.71	31.29–33.81	22.73	....
2¼	13	28.89–31.20	35.24–38.06	25.62	....
2½	12	31.36–33.87	38.25–41.32	28.31	....
2½	12	34.54–37.31	42.14–45.52	31.19	....
2⅝	12	37.40–40.39	45.62–49.28	33.77	....
3	12	39.89–43.08	48.65–52.56	35.76	....

STAINLESS STEEL MILL PRICES

(Cents per pound; subject to current lists of extras and standard sale conditions)

AISI Type	Rerolling Ingots	Rerolling Slabs, Billets	Forging Billets	Seamless Tube Billets	H.R. Strip	Shapes; H.R. & C.F. Bars, & Wire	Plates	Sheets	C.R. Strip; Flat Wire
301	16.25	20.50	....	34.25	29.75	35.25	....	46.25	38.25
302	17.25	22.75	29.75	34.50	32.00	35.50	37.50	46.50	41.50
302B	18.50	24.50	30.50	34.50	35.00	35.50	37.50	48.75	44.75
303	18.75	24.75	32.25	37.25	36.75	38.25	39.75	48.75	45.50
304	18.25	23.75	31.00	36.00	34.25	37.25	39.75	48.75	43.75
305	19.50	25.50	....	36.25	37.00	37.50	....	51.75	48.75
308	19.75	26.25	35.25	40.75	38.00	42.00	46.00	55.25	48.00
309	26.50	34.75	43.25	49.25	49.25	50.50	53.75	63.50	62.00
309S	28.50	37.50	47.50	54.50	54.00	55.50	59.00	68.50	68.50
310	33.00	43.25	56.75	66.25	67.50	67.50	69.00	72.25	78.75
314	....	....	....	....	....	....	69.00	74.50	....
316	28.00	36.25	46.75	54.50	55.00	55.50	59.00	64.50	66.50
317	33.00	43.50	58.25	66.75	67.50	68.25	70.75	77.00	79.25
318	33.50	44.00	55.25	64.50	66.25	65.50	68.75	78.00	80.25
321	22.75	29.50	35.25	40.75	42.00	42.00	46.00	55.50	54.50
347	24.50	32.25	39.50	45.75	46.50	46.75	51.25	60.75	59.25
403	....	....	....	27.00	30.75	....	32.00	34.25	44.00	....
405	16.50	21.75	25.25	29.25	30.50	30.25	31.75	42.50	39.75
410	14.00	18.25	24.00	27.75	26.25	28.75	30.00	40.75	34.25
416	....	....	....	24.50	28.25	....	29.25	....	....	....
420	22.00	28.50	29.25	34.00	35.50	35.00	38.50	49.25	52.75
430	14.25	18.50	24.50	28.25	27.00	29.25	30.50	43.50	34.75
430F	....	....	18.75	25.00	28.75	....	29.75	....	....	....
431	14.50	28.50	25.00	28.25	27.50	29.25	30.50	44.00	35.25
440A	....	....	28.50	29.25	34.00	....	35.00	....	....	....
440B	....	....	28.50	29.25	34.00	....	35.00	....	....	....
440C	....	....	....	29.25	34.00	....	35.00	....	....	....
446	....	....	....	33.75	38.25	53.00	39.50	40.75	59.75	71.00
501	....	....	....	14.00	14.50	21.25	16.00	18.25	30.50	29.00
502	....	....	....	15.25	16.00	22.25	17.00	20.00	31.75	30.00

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; American Steel & Wire Division, U. S. Steel Corp.; Armco Steel Corp.; J. Bishop & Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Charter Wire Products Co.; Cold Metal Products Co.; Crucible Steel Co. of America; Damascus Tube Co.; Wilbur D. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Co.; Firth Sterling Inc.; Ft. Wayne Metals Inc.; Helical Tube Co.; Indiana Steel & Wire Co.; Ingersoll Steel Division, Borg Warner Corp.; Jessop Steel Co.; Joslyn Mfg. & Supply Co.; Kenmore Metals Corp.; Maryland Fine & Specialty Wire Co.; McLouth Steel Corp.; Metal Forming Corp.; Page Steel & Wire Division, American Chain & Cable Co. Inc.; Republic Steel Corp.; Rome Mfg. Co.; Sharon Steel Corp.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Stainless Welded Products Inc.; Superior Steel Corp.; Timken Roller Bearing Co.; Tube Methods Inc.; United States Steel Corp.; Universal-Cyclops Steel Co.; Wallingford Steel Co.; Washington Steel Corp.

CLAD STEELS

(Cents per pound; add 4.7% to base price and extras)

Cladding Stainless	Plates: Carbon Base 10%	Plates: Carbon Base 20%	Sheets: Carbon Base 10%	Sheets: Carbon Base 20%	Sheets: Copper Base Both Sides
302	....	....	19.75	26.24-27.50	77.00
304	25.00	29.50	24.50	27.50-27.77	77.00
309	30.50	35.00	....	....	....
310	36.50	41.00	....	....	144.00
316	29.50	34.00	26.00	35.92-36.50	....
317	34.50	39.00	....	....	....
318	33.50	38.00	....	....	....
321	26.50	31.00-32.00	23.00	33.00	111.00
347	27.50	32.00	24.00	33.50-33.83	130.00
405	21.25	27.75	....	....	....
410	20.75	27.25	....	....	....
Nickel	33.55	45.15	....	....	....
Inconel	41.23	54.18	....	....	165.00
Monel	34.93	46.28	....	....	....
Copper*	....	....	....	44.00	....

	Strip: Carbon Base, Cold-Rolled 10%	Strip: Carbon Base, Cold-Rolled Both Sides	Strip: Carbon Base, Hot-Rolled 10%	Strip: Carbon Base, Hot-Rolled Both Sides
Nickel	41.00	54.00	....	....
Copper*	23.70	26.65	20.20	26.40

* Deoxidized. Production points: Stainless plates, sheets, Conshohocken, Pa. A3 and New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7 and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; nickel copper-clad strip, Carnegie, Pa. S18. Production point for copper-base sheets is Carnegie, Pa. A12.

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted)

	Cents
Sponge iron:	
98+ % Fe, annealed	18.00
Unannealed	14.50
Swedish, c.l.f. N.Y., c.l., in bags	10.90
Electrolytic iron:	
Annealed, 99.5% Fe	42.50
Unannealed (99+ % Fe)	36.50
Unannealed (99+ % Fe) (minus 325 mesh)	53.50
Powder Flakes	48.50
Carbonyl Iron:	
97.9-99.8% size 5 to 10 microns	83.00-148.00
Aluminum:	
Carlots, freight allowed	31.00
Atomized, 500 lb drums, freight allowed	34.00
Antimony, 500 lb lots	78.00
Brass, 20-ton lots	30.00-39.00
Bronze, 10-ton lots	52.25-60.00
Copper:	
Electrolytic	43.50
Reduced	43.50
Lead	21.75
Magnesium	75.00-85.00
Manganese:	
Minus 100 mesh	57.00
Minus 35 mesh	52.00
Minus 200 mesh	62.00
Nickel unannealed	89.50
Nickel-Silver 5-ton lots	48.50
Silicon	38.50
Solder	8.50*
Stainless Steel 30#	87.00
Zinc 10-ton lots	17.50-25.00
Tungsten:	Dollars
Melting grade, 99% 60 to 200 mesh:	
1000 lb and over	5.35
Less than 1000 lb	5.50
Chromium, electrolytic 99.9% Cr min.	3.50

* plus cost of metal.

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(F.o.b. midwestern plants; per cent off list for less than case lots to consumers)

	Reg. Hvy.
6 in. and shorter:	
½-in. & smaller diam.	11
⅝-in. & ¾-in.	15
⅞-in. and larger	14
Longer than 6 in.:	
All diams.	8
Lag bolts, all diams.:	
6 in. and shorter	19
over 6 in. long	16
Ribbed Necked Carriage	15
Blank	30
Plow	30
Step, Elevator, Tap and Sleigh Shoe	18
Tire Bolts	8
Boiler & Fitting-Up Bolts	28

NUTS

	Reg.	Hvy.
H.P. & C.P. Square:		
½-in. & smaller	10	10
⅝-in. & ¾-in.	8	1
⅞-in.-1½-in.	4	+4
1⅝-in. & larger	22	1
H.P. Hex.:		
½-in. & smaller	12	+3
⅝-in. & ¾-in.	8	+3
⅞-in.-1½-in.	4	+3
1⅝-in. & larger	4	+3
C.P. Hex.:		
½-in. & smaller	22	18
⅝-in. & ¾-in.	19	13
⅞-in. & 1½-in.	15	8
1⅝-in. & larger	2	+4

SEMIFINISHED NUTS

American Standard

(Per cent off list for less than case or keg quantities)

	Reg. Hvy.
½-in. & smaller	33 26
⅝-in. & ¾-in.	27 19
⅞-in.-1½-in.	21 11
1⅝-in. & larger	5 list
	Light
⅞-in. & smaller	33
1½-in. to ⅝-in.	26
¾-in. to 1½-in.	18

SQUARE HEAD SET SCREWS

(Packaged; per cent off list)

1 in. diam x 6 in. and shorter	37
1 in. and smaller diam. x over 6 in.	24

WAREHOUSE STEEL PRODUCTS

(Representative prices, cents per pound, subject to extras, f.o.b. warehouse. City delivery charges are 20 cents per 100 lb except: New York 30 cents; Philadelphia, 25 cents; Birmingham, Cincinnati, San Francisco, St. Paul, 15 cents.)

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	H.R. 18 Ga., Heavier*	C.R.	Gal. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.‡	H.R. Alloy 4140††‡		Carbon	Floor
Baltimore	5.96	7.35	7.38	6.68	...	6.56	7.64	11.27	6.59	6.55	7.78
Boston	6.66	7.54	8.93	6.81	...	6.57	7.82	11.98	6.68	6.83	7.98
Buffalo	5.96	6.85	8.71	6.47	...	6.05	7.15	11.85	6.20	6.38	7.67
Birmingham	5.80	6.65	7.70§	5.80	...	5.80	8.62	...	5.95	6.10	8.15
Charlotte, N. C.	6.75	7.55	8.49	6.70	...	6.80	8.09	...	6.80	6.85	...
Chicago	5.95	6.82	7.75	6.10	...	5.98	7.025	11.45	6.07	6.03	7.18
Cincinnati	6.61	7.19	8.47	6.72	...	6.58	7.66	12.17	6.93	6.85	7.88
Cleveland	6.18	7.12	8.15	6.58	...	6.34	7.40	11.89	6.79	6.50	7.79
Detroit	6.22	7.02	8.04	6.39	6.85	6.27	7.32	11.57	6.54	6.55	7.52
Houston	6.89	...	8.62	7.16	...	7.13	...	...	6.94	6.86	8.24
JerseyCity,N.J.	6.54	7.45	8.72	6.82	...	6.75	7.90	11.84	6.50	6.67	8.01
Los Angeles	7.05	8.70	8.45	7.05	11.20	6.85	9.40	12.75	6.75	6.90	8.90
Milwaukee	6.12	6.99	7.92	6.27	...	6.15	7.30	11.62	6.24	6.20	7.35
Moline, Ill.	6.31	7.17	8.25	6.45	...	6.33	7.37	...	6.42	6.38	...
New York	6.54	7.45	8.72	6.82	...	6.75	7.90	11.84	6.50	6.67	8.01
Newark, N. J.	6.77	7.59	8.72	6.82	...	6.75	7.90	...	6.59	6.67	8.08
Norfolk, Va.	6.75	...	...	7.30	...	7.00	8.50	...	6.85	6.95	7.65
Philadelphia	6.53	7.55	8.35	7.02	8.30	6.87	7.94	11.89	6.67	6.63	7.65
Pittsburgh	5.95	6.82	8.30	6.20	...	5.98	7.12	11.45	6.07	6.03	7.18
Portland, Oreg.	7.80	9.05	9.30	7.50	...	7.25	9.40	...	7.25	7.05	9.25
Richmond, Va.	6.14	6.95	8.68	6.53	...	6.30	7.73	...	6.58	6.68	7.80
St. Louis	6.25	7.12	8.06	6.40	...	6.28	7.43	11.75	6.47	6.43	7.66
St. Paul	6.47	7.48	8.56	6.77	...	6.64	7.78	...	6.73	6.69	7.92
San Francisco	7.15	8.40	9.60	7.05	...	6.85	9.40	12.75	6.75	6.90	8.90
Seattle-Tacoma	8.15	8.70	10.10	8.02	...	7.58	10.13	13.50	7.50	7.59	9.40
Spokane (city)	7.40	9.40	9.80	7.15	...	7.10	9.60	13.20	7.00	7.10	9.15
Washington	6.51	7.86	8.35	7.19	...	7.07	8.15	...	7.10	7.96	8.20

*Prices do not include gage extras; †prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extra excluded); ‡ includes 35-cent special bar quality extra; § as rolled; †† as annealed. Base quantities, 2000 to 9999 lb except as noted. Cold-rolled strip, 2000 lb and over; cold-finished bars, 2000 lb and over; §—500 to 1499 lb; ‡—1000 to 1999 lb.

Warehouses Revising Price Schedules

Quotations being adjusted upward at various distributing points to reflect mill base price advances. Demand seen slackening as mass vacation period nears

Philadelphia—Warehouse prices are being advanced here as result of the increases in mill base prices. June business on a tonnage basis may be off slightly, but it will be heavier on a price basis as result of the various changes in price schedules.

Plates, shapes, bars and hot and cold-rolled sheets continue in active demand, although some easing in pressure is already being noted as a result of the vacation season. A number of metalworking plants will be down for mass vacations this week, with an increasing number down next week and the week following.

Cleveland—District warehouses are adjusting their prices upward to reflect the recent increases in mill quotations. At the same time the quantity extra and deduction schedule has been revised.

Under the new price schedule hot-rolled sheets are quoted 6.18 cents; cold rolled sheets 7.12; No. 10 galvanized sheets, 8.15; hot-rolled strip, 6.58; hot-rolled bars, 6.34; cold-finished bars, 7.40; standard structural shapes, 6.79; carbon plates, 6.50; floor plates, 7.79.

The new quantity extra and deduction schedule on hot-rolled items is as follows: Under 100 pounds, add $4; 100 to 399 pounds, add $2; 400 to 999 pounds add, 85 cents; 1000 to 1999 pounds, add 20 cents; 2000 to 9999 pounds continues as base; 10,000 to 19,999 pounds, deduct 20 cents; 20,000 to 39,999 pounds, deduct 40 cents; over 40,000 pounds, deduct 50 cents.

Approach of mass vacations in manufacturing plants in this area is reflected in a noticeable slackening in demand on the warehouses. June order volume to date is reported down from that of May.

Cincinnati — Down-the-line price boost was put into effect here with very little resistance from steel consumers. Business is good. Warehousemen are complaining about cuts in their third quarter mill quotas. They claim the cuts make unbalanced inventories a certainty in the period and might possibly extend the condition into fourth quarter.

Chicago — Steel warehouses are studying the new prices of their mill suppliers and are working out the increases which they will apply to their lists. Considerable work remains to be done. There has been no buying flurry to beat higher prices. Demand is still good and pressing for items in short supply. Home appliance and farm implement industries are buying less actively.

Boston—Product by product the warehouses are building inventories. Products still short include structurals, hot and cold-rolled sheets, heavy bars and plates.

Balanced supply is not likely before some time in fourth quarter. Most specialties are available, including stainless, floor plates and tool steels. Bar stocks are also near balance with more sizes and grades on shelves.

New York—Alloy steel stocks are more generally in balance than carbon steel inventories. Warehouses can order alloys in quantities needed, but mill lead time has not been reduced. More nickel is also in sight for AISI alloys. Carbon steel stocks are gradually improving, although heavy structurals, large rounds and flats are scarce.

Demand for steel from warehouse is more spotty preliminary to the summer lull.

Pittsburgh—District warehouses report a tapering off in demand for most items, but attribute it to vacation shutdowns. A slower market is expected until about the third week in July when most mass vacations are completed. At that time, the market is expected to return to its former vigor. Meanwhile, warehousemen are taking advantage of the breather to build inventories.

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Sub-Group — Special Purpose

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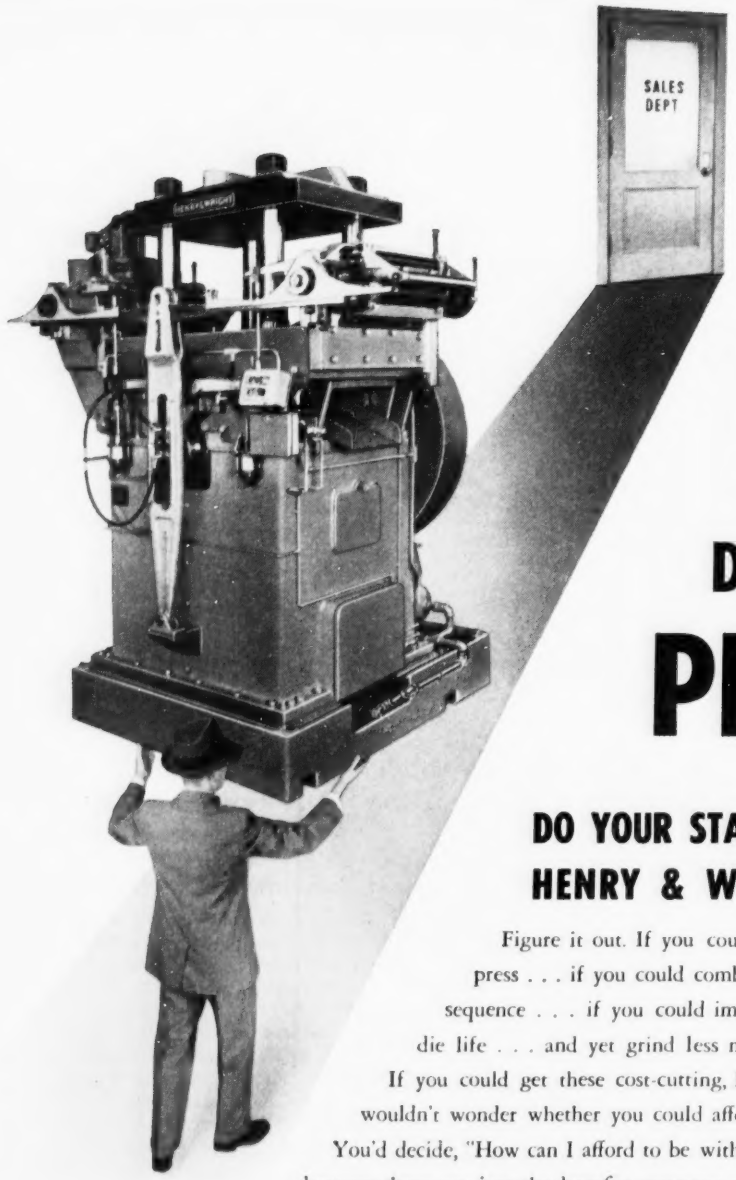

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Demand Pressure for Sheets Unabated

General increase in prices not expected to materially lessen consumers' efforts to get tonnage though removal of strike threat brightens supply prospects

Sheet and Strip Prices, Page 137 & 138

New York—Advances of $3 a ton on hot carbon sheets and $4 a ton on cold carbon sheets still leave the market with demand for more tonnage than the mills can supply. However, there is perhaps not quite the pressure there was a few weeks ago when consumers were endeavoring to lay in as much tonnage as possible before price increases became effective.

Another factor which may be retarding pressure a bit is the approach of the vacation season during which time many consuming plants will be closed for a period of a week to two weeks.

Despite the rather sluggish movement in galvanized sheets over recent weeks, leading sellers nevertheless advanced quotations on this material $4 a ton. Stainless sheets were raised by some leading producers approximately 5 per cent across the board, with quotations rounded out to the nearest quarter cent.

Boston—Heavy forward buying of narrow cold-rolled strip has tapered. Bulk of volume was ordered before the base price increase of $7 per ton for low carbon, and was stimulated by the quantity base of 10 tons. That some of this fourth quarter tonnage will be revised downward is likely.

Full extent of the cold strip cost increase is now being realized. Consumers are becoming more concerned as to second-half inventory policy.

Distribution of silicon sheets for fourth quarter finds allotments far below requirements on cold-rolled coils. Behind schedule, some October capacity is to be blanked out.

Philadelphia — With Sparrows Point, Md., the governing base, the minimum delivered prices here on hot-rolled carbon sheets, which have been advanced $3 per ton, is 4.2585c, on cold-rolled sheets and galvanized sheets, which have been increased $4 per ton, delivered prices are 5.1085c and 5.6085c, respectively. The rate from Sparrows Point to this city, before 3 per cent tax, is .3335c per pound on steel in 40,000-pound carlots.

Pittsburgh—Some cutbacks from automotive customers are reported. These range up to about 25 per cent for companies who have been taking heavy conversion tonnage. Some cancellations from other industries also are reported.

Cleveland—There is nothing in the market currently to indicate any early slackening in sheet demand. While some letdown in consumption is anticipated over the next six weeks or so as manufacturing plants suspend or curtail operations because of vacations, indications are they will continue to take sheet shipments without interruption. Few requests have come to the mills to defer shipments.

Pressure is not quite as strong as it was recently when some consumers sought to get in additional tonnage as inventory protection in event of a steel strike. With the strike threat removed pressure stemming from such influence has faded.

The increase in base prices on sheets is not seen as killing off demand to any extent though the higher prices may cause buyers to order more cautiously from here on. Under the new price schedules hot-rolled strip is up $4 per ton, hot-rolled sheets $3, cold-rolled sheets $4, galvanized sheets $4, and electrical sheets $10 per ton.

Cincinnati—There seems to be no letup in demand for sheets and strip. All facilities in the Cincinnati district are going at full capacity with the result production is approaching an all-time high.

Chicago—Third quarter demand for sheets of all types holds as strong as ever. There are those, however, who feel a tapering off will come shortly. Two incentives for acquiring maximum tonnage as quickly as possible, namely, fear of a steel strike and higher prices, no longer constitute influences.

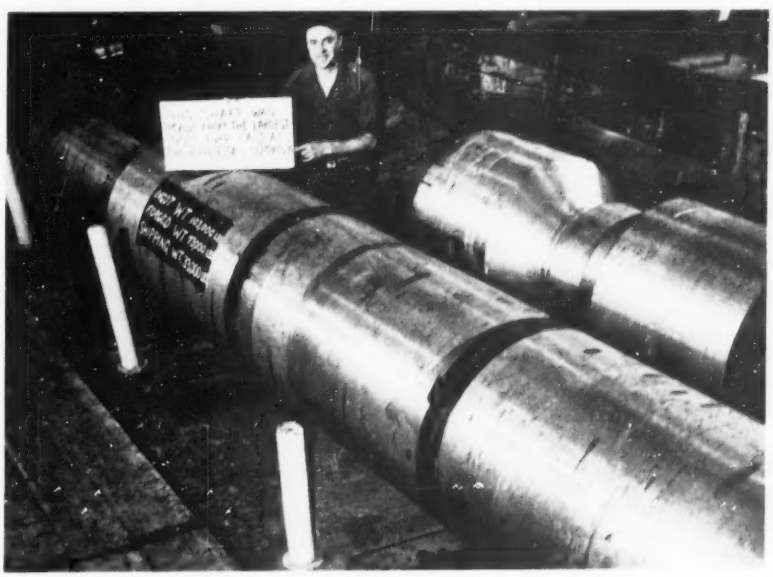
Los Angeles—Arrearages at the Geneva plant of Columbia-Geneva Division, U. S. Steel Corp., have retarded production schedules of cold-rolled sheets and hot-rolled coils at the Pittsburg plant.

Tin Plate . . .

Tin Plate Prices, Page 137

Cleveland — Canmakers are not pressing as hard for tin plate as they were some time back but demand continues sufficiently strong to keep the tin mills on full schedules.

Prices are unchanged, tin plate being one of the few items not included in the general steel price advance just effected. One reason for this is the fact producers a year ago adopted a policy of announcing tin plate



Heppenstall Fashions 33,000-lb Steel Shaft

This shaft was made from the largest ingot ever cast at Heppenstall Co., Pittsburgh forgings manufacturer. Open-hearth furnaces were tapped simultaneously to produce the original 103,000-lb ingot. Removal of scale during forging reduced weight to 73,000 lb. Final weight after machining was 33,000 lb

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price schedules as of Apr. 1 and Oct. 1.

Last week Reconstruction Finance Corp. approved sale to Republic Steel Corp. of a tin mill at Niles, O. The purchase price is approximately $1,992,000.

The facilities, consisting of buildings and equipment, were constructed during World War II at request of the War Production Board and have been rented by Republic Steel Corp. for the past 10 years. Cost of construction was $5,273,000 and the total rental received amounts to $4,270,000.

Plates . . .

Plate Prices, Page 136

Philadelphia—In addition to previously announced advances of $4 per ton on carbon plates by Bethlehem Steel Co. and Alan Wood Steel Co., the Claymont, Del., producer has advanced prices on sheared plate $4 a ton to 4.55c. This producer has also increased alloy plates to 5.65c, mill, an increase of $6 per ton.

No change is being made in the price of steel going into heads and flange work, although there is an increase of 10 per cent on forming work.

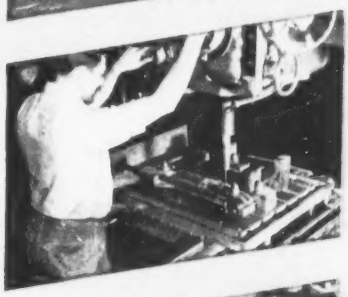
Lukens Steel Co. is standing pat, having decided to make no change in either carbon or alloy plate prices. No decision has been reached with regard to costs on fabricated work.

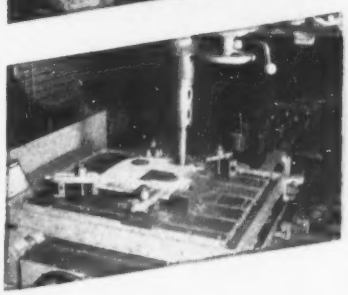
Sparrows Point, Md., continues to be the governing base on delivered prices here. With the new base of 4.10c Sparrows Point and freight rate of .3335c per pound on shipments in 40,000-pound carlots, the minimum delivered Philadelphia price is now 4.4335c. The freight rate does not include the 3 per cent federal tax.

Boston — Plate fabricating shops are more conservative as to forward buying, showing caution as to fourth quarter consumer estimates. Inventories are not heavy, but in scattered cases demand for fabricated work has slackened. Light and narrow plates have tightened with less capacity available on strip mills. Higher prices have a sobering effect. Relatively few plate users who hoped to beat the base price increases were able to do so. Demand for clad plates is holding with most producers unable to make much headway in bettering deliveries. Floor plates are in ample supply, including stocks with warehouses.

New York—With plates up $4 a ton at Sparrows Point, the governing base on shipments here, the min-

BULLARD SPACER





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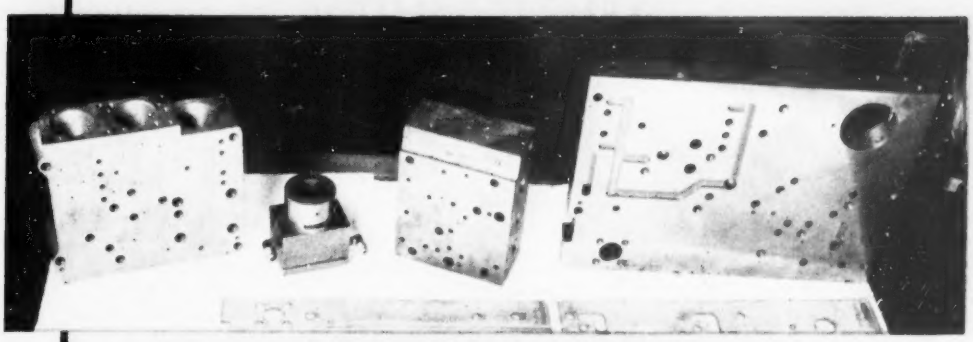

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imum delivered price is now 4.583c. This reflects freight of .483 cent per pound on 40,000-pound carlots, not including 3 per cent federal tax.

In addition to Bethlehem Steel Co. and U. S. Steel Corp., Alan Wood Steel Co. has also increased carbon plates $4 a ton. Not all other eastern mills have yet taken action. The Alan Wood base price is now 4.55c Conshohocken on sheared carbon plates. This producer also advanced floor plates $4 a ton to 5.15c.

Pittsburgh—Pressure for delivery of plates seems directly affected by the Korean truce negotiations. The hue and cry of a few weeks ago has dwindled from one or two car builders. Producers expect a good third quarter, but will not venture any predictions about the state of their order books for fourth quarter. Some cutbacks in the heavy machinery program are noticeable in demand for heavy-gage plates.

Chicago—Platemakers doubt that supply and demand balance will be achieved at the earliest until late this year. Present deficiency continues great. Plate fabricators have poor inventories and would like to accomplish improvement to provide better working conditions. However, inventory need has been lessened somewhat by the fact that the steel wage agreement removed the possibility of an interruption in plate production. As to price, availability still is more important.

Los Angeles—Plate deliveries from at least one eastern mill—Lukens' Coatesville plant—continue on schedule. In worse shape is the Geneva plant of Columbia-Geneva Division, U. S. Steel Corp., beset by soaking pit bottlenecks and who blanked out July and August for carryover from second quarter.

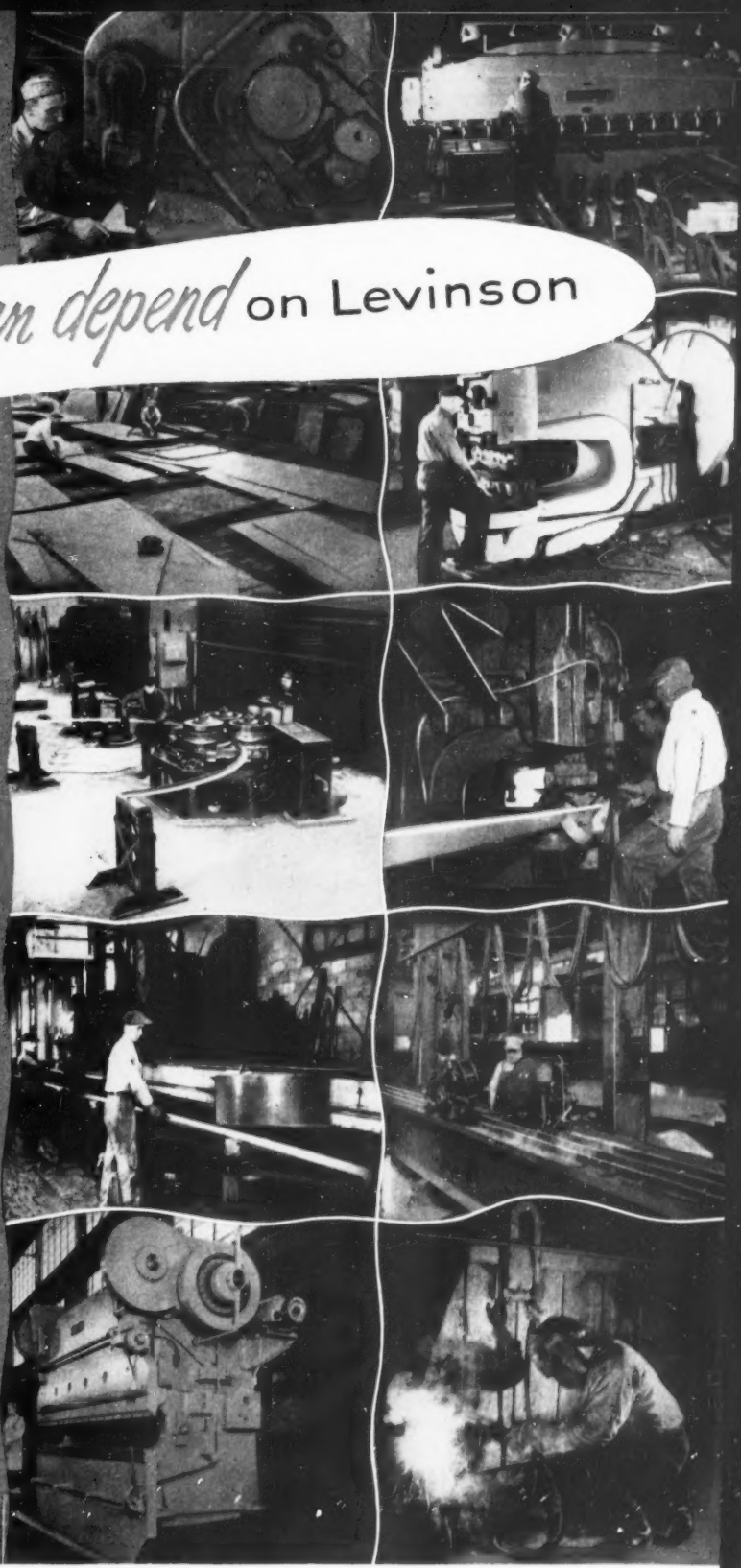
Tool Steel . . .

Tool Steel Prices, Page 138

Pittsburgh—Base prices on tool steels have been raised 5 per cent. Extras also are up 5 per cent to the nearest ½ cent, with the exception that extras under 5 cents are increased ½ cent. The warehouse annealing and packing extras remain unchanged. The new prices are effective with shipments June 24.

Carboloy Department of General Electric Co. announced a 15 per cent reduction on carbides effective June 22. Other carbide makers are reported taking similar action.

Pittsburgh—Latrobe Electric Steel Co. announced new base prices and extras on its high-speed, alloy and carbon tool steels. Prices represent about a 5 per cent increase.



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Steel Bars . . .

Bar Prices, Page 136

Cleveland—Shortage of bar stock is expected to continue until well along toward close of the year. Currently bar mills are booked up through third quarter and could be booked still farther ahead were they disposed to accept commercial orders into fourth quarter. Military requirements, it is indicated, will not ease off even though a truce is arranged in Korea.

Consumers continue to have difficulty getting tonnage, especially in the larger sizes, and expectations are they will take shipments throughout the vacation period in an effort to accumulate something of an inventory.

The increase in bar prices, $4 on hot-rolled, and $5.50 on cold-finished is not thought likely to discourage buying in view of the continued supply stringency and strong demand.

Smaller producers are following the lead of the larger interests in advancing prices. Last week, Cuyahoga Steel & Wire Co., this city, posted a price of 5.20c on cold-finished carbon bars, and 6.325c on cold-finished alloy bars. Republic Steel Corp. raised its price on hot-rolled carbon bars to 4.15c, on cold-finished carbon to 5.20c, on hot-rolled alloy to 4.875c, and on cold-finished alloy to 6.325c.

Philadelphia — Following an advance in hot-rolled carbon bars of $4 per ton, Johnstown, Pa., the governing base on shipments here, the minimum delivered Philadelphia price is now 5.302c. This is predicated on a rate of .552c on shipments in 40,000-pound carlots, not including 3 per cent federal tax.

Advances are now being announced on cold-drawn bars. Keystone Drawn Steel Co., Spring City, Pa., has advanced cold-finished carbon to 5.65c, mill, and cold-finished alloy to 6.475c, an increase of $5.50 per ton in each case. Bethlehem Steel Co. has advanced cold-finished alloy bars $5.50 per ton to 6.275c Bethlehem, Pa., and Lackawanna, N. Y.

Precision Drawn Steel Co., Camden, N. J., has advanced cold-drawn carbon bars to 5.65c, mill, an increase of $5.50 a ton, and alloy cold-finished bars to 6.65c, up $6 per ton. Wyckoff Steel Co. has increased cold-rolled carbon to 5.70c, Newark, an increase of $6.50 per ton, and to 5.85c, Putnam, Conn., an increase of $7.50 a ton. It also increased cold-drawn alloy bars at Newark to 6.65c, up $6 per ton.

Boston—Commercial steel bars under 2-in. meet demand, but heavier stock, in both carbon and alloy grades, is booked up through third

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quarter. Military requirements continue high. Some easing in fourth quarter is looked for in the larger grades of carbon and a wider range of alloy specifications due to better outlook for several alloying elements.

New York—An increase of $4 per ton on hot carbon bars brings the minimum delivered price here up to 5.371c. This is predicated on a new price of 4.75c Johnstown, the governing base here, plus a freight rate of .621c per pound on 40,000-pound carlots, not including the 3 per cent federal tax.

Demand continues strong, with producers generally booked up solidly throughout third quarter on non-rated work.

Pittsburgh—Demand for steel bars seems to center about warehouse orders and the supplying of forgers. Bolt and nut people are not ordering in heavy quantities for any sizes except the larger diameters. They have been trying to build up inventories on larger bar stock for some time. Order books for smaller diameters are strong for third quarter, barring any Korean truce cancellations.

Cincinnati—Carbon bars remain in fairly tight supply particularly in the large diameters, but the supply of all types of alloy bars appears to have improved. Inventories are smoothing out with only sizes over 5-inch offering any difficulty.

Structural Shapes . . .

Structural Shape Prices, Page 136

Boston—If all price increases are passed on, base prices, shop labor and extras added to fabricated structural steel, the advance approximates $8 to $10 per ton. Actually, although backlogs are heavy, competitive factors do not reflect a full pass-through.

Hangar contracts account for 4000 tons while the Westfield river bridge, Agawam, Mass., expected out shortly, accounts for 3000 tons.

New York—Advances of $5 a ton on shapes by two of the leading eastern producers point to higher prices on heavy building construction. This will be reflected not only on new work but on considerable work under way where escalator clauses are in effect. Actually, some prospective work may be held up pending a review of costs, not only as affected directly by steel price increases but indirectly by higher prices for various building components and other materials. Bridge work still features demand.

Philadelphia—Structural steel demand includes little commercial work or even public work other than bridge

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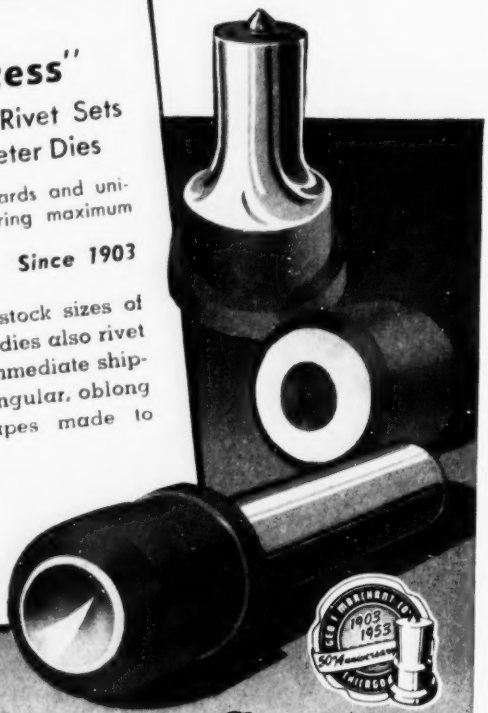

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construction. There is some miscellaneous school inquiry, but projects are small. Backlogs of the medium and large fabricating shops are well extended, but not so with the small shops. At least a number of them are competing sharply for work.

Pittsburgh—While structural steel has been on the critical list in the Pittsburgh area, producers now admit anxiety among buyers has dwindled. Demand is considered good on the basis of orders on the books. The fact remains, however, pressure for delivery is off.

Semifinished Steel . . .

Semifinished Prices, Page 136

Los Angeles—Closedown of the 86-inch hot-strip mill at Fontana Works, Kaiser Steel Corp., for addition of 2 new stands made possible the sale of 5000 tons of surplus slabs for conversion use at the Geneva plant of Columbia-Geneva Division, U. S. Steel Corp., beset by soaking pit troubles.

Wire . . .

Wire Prices, Page 138

Boston—Wire buying has slackened with reaction to base and extra price increases varied. Space held open for some tonnage products in third quarter has not been taken up. Lead time for August for some of these has expired and capacity set aside for cold heading and upholstery spring wire is not filled. Demand from key accounts is off.

Base price advances on high carbon spring wire, annealed merchant quality wire, low carbon manufacturers' wire and high carbon MB spring wire are somewhat above the average, $7.50 per ton, Worcester and Trenton, in the latter grade.

New York — On major tonnage products wire mills are booked through third quarter, but there are openings for rope wire and fine wire specialties. While there is more talk of a possible slackening in automotive demand in fourth quarter, shipments are holding at high level currently.

Furniture makers are taking less upholstery wire. Nonintegrated wire mills have improved rod inventories, but depend heavily on one eastern rod mill for maintainence of semifinished supply.

Cleveland—Independent wiremakers are marking up their prices on the various items in line with the advances announced a week ago by the leading producing interest. Demand continues strong for manufacturers wire products, but sluggishness continues in merchant items.

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Prices as reported to STEEL

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si). Carlot per gross ton, $85, Palmerton, Pa.; $85, Pittsburgh and Chicago; (16% to 19% Mn) $1 per ton lower.

Standard Ferromanganese: (Mn 78-82%, C 7% approx.) Carload, lump, bulk $225 per gross ton of alloy, c.l. packed $237; gross ton lots, packed, $252; less gross ton lots, packed $260, f.o.b. Philo or Marietta, O., Lynchburg, Va.

(Mn 74-76%, C 7% approx.) Base price per net ton $200, Etna, Johnston and Sheridan, Pa.

Shipment from Pacific Coast warehouses by one seller, add $33 to above prices f.o.b. Los Angeles, Oakland, Portland, Oreg. Shipment from Chicago warehouse, ton lots $267; less gross ton lots, $284, f.o.b. Chicago. Add or subtract $2.80 for each 1% or fraction thereof, of contained manganese over 82% and under 78%, respectively.

(Mn 86-89%) 13.5c per pound of contained Mn, f.o.b. Alloy, W. Va.; Niagara Falls, N. Y.; Ashtabula, O.

(Mn 79-81%) Lump, $208 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 79%, fractions in proportion to nearest 0.1%.

Low-Carbon Ferromanganese, Regular Grade: (Mn 85-90%). Carload, lump, bulk, max. 0.07% C, 27.95c per lb of contained Mn, carload packed 28.7c, ton lots 29.8c, less ton 31.0c. Delivered. Deduct 0.5c for max. 0.15% C grade from above prices, 1c for max. 0.30% C, 1.5c for max 0.50% C, and 4.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P. 0.06% max). Add 0.5c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max). Carload, lump, bulk 21.35c per lb of contained Mn, carload packed 22.1c, ton lot 23.2c, less ton 24.4c. Delivered. Spot, add 0.25c.

Manganese metal, 2" x D (Mn 96% min, Fe 2% max, Si 1% max. C 0.2% max): Carload, lump, bulk, 36.2c per lb of metal; packed, 36.95c; ton lot 38.45c; less ton lots 40.45c. Delivered. Spot, add 2c.

Electromanganese: Carload, 30c; ton lots, 32c; 250 to 1999 lb, 34c. Premium for hydrogen-removed metal, 1.5c per pound, f.o.b. cars Knoxville, Tenn. Freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65-68%). Contract, lump, bulk, 1.50% C grade, 18-20% Si, 11.4c per lb of alloy, carload packed, 12.15c, ton lots 13.05c, less ton 14.00c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. For 3% C grade, Si 12-14.5%, deduct 0.5c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max. Si 4% max, C 0.10% max). Contract, ton lots 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38-43%, Al 8% max. Si 4% max, C 0.10% max). Ton lots $1.35, less ton $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $177 per net ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4.5%.) Contract $195 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l., lump, bulk 24.75c per lb of contained Cr., c.l. packed 25.65c, ton lot 26.80c, less ton 28.20c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr. 67-72%) Contract, carload, lump, bulk, max. 0.03% C 37.60c per lb contained Cr, 0.04% C 35.50c, 0.06% C 34.50c, 0.10% C 34.00c, 0.15% C 33.75c, 0.20% C 33.50c, 0.50% C 33.25c, 1% C 33.00c, 1.50% C 32.85c, 2% C 32.75c. Carload packed add 1.1c, ton lot 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, High Carbon: (Cr 62-66%, C 5-7%) Contract, c.l. 8 M x D, bulk, 26.25c per lb of contained Cr. C.l., packed 27.15c, ton 28.50c, less ton 30.25c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, Low Carbon: (Cr. 50-54%, Si 28-32%, C 1.25% max.) Contract, carload, packed, 8 M x D, 18.35c per lb of alloy; ton lot 19.2c; less ton lot, 20.4c, delivered; spot, add 0.25c.

Low-Carbon Ferrochrome Silicon: (Cr 34-41%, Si 42-49%, C 0.05% max.) Contract, carload, lump, 4" x down and 2" x down, bulk, 25.75c per lb of contained chromium plus 12.4c per pound of contained silicon; 1" x down, bulk 25.90c per pound of contained chromium plus 12.60c per pound of contained silicon. F.o.b. plant; freight allowed to destination.

Ferrochrome Silicon, No. 2: (Cr 36-39%, Si 26-39%, Al 7-9%, C 0.05% max.) 25.75c per lb of contained silicon plus 16.4c per lb of contained silicon plus aluminum 3" x down, delivered.

Chromium Metal: (Min 97% Cr and 1% Fe) contract carload, 1" x D; packed, max 0.50% ton lots $1.14, less ton $1.16. Delivered. Spot, add 5c; prices on 0.10 per cent carbon grade, C grade, $1.12 per lb of contained chromium, up 4c.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 20.0c per lb of alloy, carload packed 20.8c, ton lot 22.3c, less ton 23.3c. Delivered. Spot add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 10.0c per lb of alloy, carload packed 20.2c, ton lot 22.1c, less ton 23.6c. Deld. Spot add 0.25c.

SILICON ALLOYS

25-30% Ferrosilicon: Contract, carload, lump, bulk, 20.0c per lb of contained Si, packed 21.40c; ton lot 22.50c, f.o.b. Niagara Falls, freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 12.40c per lb of contained Si, carload packed 14.0c, ton lot 15.45c, less ton 17.1c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max.) Add 1.3c to 50% ferrosilicon prices.

75% Ferrosilicon: Contract, carload, lump, bulk, 14.3c per lb of contained Si, carload packed 15.6c, ton lot 16.75c, less ton 18.0c. Delivered. Spot, add 0.8c.

90-95% Ferrosilicon: Contract, carload, lump, bulk, 17.0c per lb of contained Si, carload packed 18.2c, ton lot 19.15c, less ton 20.2c. Delivered. Spot, add 0.25c.

Silicon Metal: (Min 97% Si and 1% max Fe) C.l, lump, bulk, regular 18.5c per lb of Si, c.l. packed 19.7c, ton lot 20.6c, less ton 21.6c. Add 0.5c for max, 0.10% calcium grade. Deduct 0.5c for max 2% Fe grade analyzing min 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe) Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.90c per lb of alloy, ton lots packed 11.30c, 20 to 1999 lb 11.65c, smaller lots 12.15c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 30-43%, Fe 40-45%, C 0.20% max.). Contract, c.l lump bulk 7.0c per lb of alloy, c.l. packed 7.75c, ton lot 8.5c, less ton 9.35c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max.). Contract, carload, lump, packed 20.25c per lb of alloy, ton lot 21c, less ton 22.25c Freight allowed. Spot add 0.25c.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth Grade (V 35-55%, Si 8-12% max, C 3-3.5% max). Contract, any quantity, $3.10 per lb of contained V. Delivered. Spot, add 10c **Crucible-Special Grades** (V 35-55%, Si 2-3.5% max, C 0.5-1% max), $3.20. **Primos and High Speed Grades** (V 35-55%, Si 1.50% max, C 0.20% max) $3.30.

Grainal: Vanadium Grainal No. 1, $1 per lb; No. 6, 68c; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract, less carload lots $1.28 per lb contained V_2O_5, freight allowed. Spot, add 5c.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%), 10,000 lb W or more, $4.35 per lb of contained W; 2000 lb W to 10,000 lb W, $4.45; less than 2000 lb W, $4.57, f.o.b. Niagara Falls, N. Y.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more, 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered, spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over, are as follows: Grade A (10-14% B) 75c per pound; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si). $5.25 per lb contained B, delivered to destination.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 1 to 2%) contract, lump, carloads 9.50c per lb, f.o.b. Suspension Bridge, N. Y. freight allowed same as high-carbon ferrotitanium.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx. 3½ lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 14.50c per lb of briquet, carload packed 15.2c, ton 16.0c, less ton 16.9c Deld. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk 12.45c per lb of briquet, c.l. packaged 13.25c, ton lot 14.05c, less ton 14.95c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Contract, c.l. bulk 12.65c, per lb of briquet, c.l. packed 13.45c, ton lot 14.25c, less ton 15.15c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size — weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.95c per lb of briquet, c.l. packed 7.75c, ton lot 8.85c, less ton 9.45c. Delivered. Spot, add 0.25c.
(Small size—weighing approx. 2½ lb and containing exactly 1 lb of Si). Carload, bulk 7.1c, c.l. packed 7.9c, ton lot 8.7c, less ton 9.6c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each) $1.14 per pound of Mo contained, f.o.b. Langeloth, Pa.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 56-60%, Si 8% max, C 0.4% max). Contract, ton lot, 2" x D, $4.90 per lb of contained Cb, less ton $4.95. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx, Ta 20% approx, and Cb and Ta 60% min, C 0.30% max) ton lots, 2" x D, $3.75 per lb of contained Cb plus Ta, deld.; less ton lots $3.80.

Silicaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carload packed, 1" x D, 45c per lb of alloy, ton lot 47c, less ton 49c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, carload, packed, ⅛" x 12 M, 17.5c per lb of alloy, ton lots 18.25c, less ton 19.5c. Deld. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 17.50c per lb of alloy; ton lots 18.50c; less ton lots 20c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

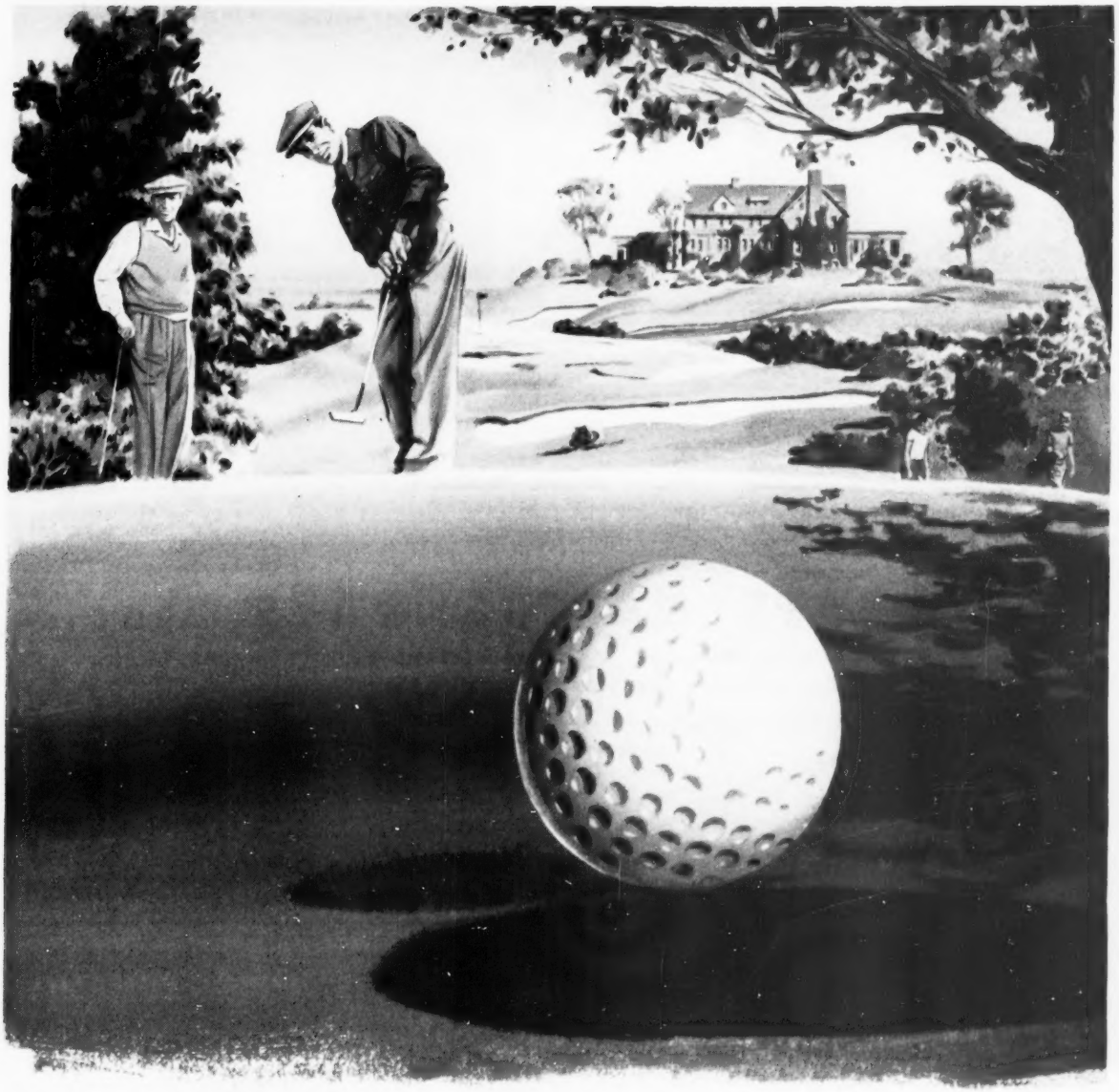
V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 15c per lb of alloy; ton lots 16.50c; less ton lots 17.75c, f.o.b., Niagara Falls; freight allowed to St. Louis.

Simanal: (Approx. 20% each Si, Mn, Al; bal. Fe) Lump, carload, bulk 14.50c, packed 15.50c; ton lots, packed, 15.75c; less ton lots, packed, 16.25c per lb of alloy, delivered to destination within United States.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $3 for each 1% of P above or below the base); carloads, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., $65 per gross ton.

Ferromolybdenum: (55-75%). Per lb contained Mo f.o.b. Langeloth, $1.32 in all sizes except powdered which is $1.41; Washington, Pa., furnace, any quantity $1.32.

Technical Molybdic-Oxide: Per lb, contained Mo, f.o.b. Langeloth, Pa., $1.14 in cans; in bags, $1.13. f.o.b. Langeloth, Pa.; Washington, Pa., $1.13.



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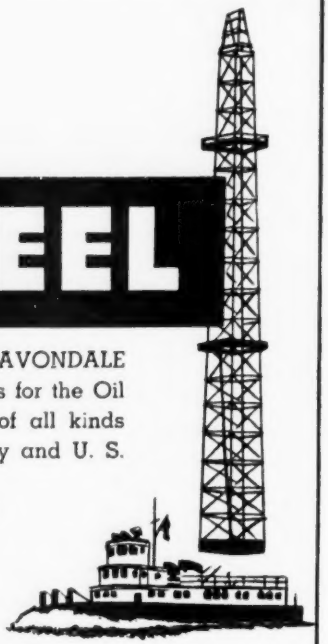

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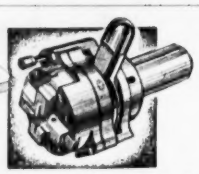

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ORES–COKE–REFRACTORIES

Prices as reported to STEEL; changes shown in Italic.

ORES

Lake Superior Iron Ore

(Prices effective for ore delivered up to and including June 30, 1953; gross ton, 51.50% iron natural, rail or vessel, lower lake ports.)

Old range bessemer	$10.10
Old range nonbessemer	9.95
Mesabi bessemer	9.85
Mesabi nonbessemer	9.70
Open-hearth lump	10.95
High phosphorus	9.70

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon, which were in effect on Dec. 31, 1952, and increases or decreases after such date are for buyer's account.

Eastern Local Iron Ore

Cents per unit del. E. Pa.

Foundry and basic 56-62% concentrates contract	17.00-18.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%:	
Spot	nom.
Long-term contract	22.00
North African hematites (spot)	24.00-26.00
Brazilian iron ore, 65-69% (spot)	25.00

Tungsten Ore

Net ton unit, duty paid

Foreign wolframite and scheelite, per net ton unit	$55.00
Domestic scheelite, mine	63.00

Manganese Ore

Manganese, 48% nearby, $1.18-1.21 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; shipments against old contracts for 48% ore are being received from some sources at 90-92c.

Chrome Ore

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African

48% 2.8:1	$40.00-$42.00
48% 3:1	44.00-46.00
48% no ratio	32.00-34.00

South African Transvaal

44% no ratio	$27.00-28.00
48% no ratio	34.00-35.00

Brazilian

44% 2.5:1 lump	nom. $32

Domestic

(Rail nearest seller)

48% 3:1	$39.00

Molybdenum

Sulphide concentrates per lb. molybdenum content, mines	$1.00

REFRACTORIES

Fire Clay Brick

High-Heat Duty: Pueblo, Colo., $89.00; Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech **Creek, Clearfield, Curwensville, Lochhaven,** Lumber, Orviston, West Decatur, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parral, Portsmouth, O., Ottawa, Ill., Stevens Pottery, Ga., Woodbridge, N. J., $99.30; Salina, Pa., $104.55; Niles, O., $109; Los Angeles, Pittsburg, Calif., $132.30.

Silica Brick

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Portsmouth, O., $99.30; Hays, Pa., $105.10; Niles, O., $107; E. Chicago, Ind., Joliet, Rockdale, Ill., $109.70; Cutler, Utah, $116.55; Los Angeles, $122.85.

Insulating Fire Brick

2300° *F:* Massillon, O., $178.50; Clearfield, Pa., $179.55; Augusta, Ga., Beaver Falls, Zelienople, Pa., Mexico, Mo., $186.90.

Ladle Brick

Dry Pressed: Bessemer, Ala., $64.60; Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Pa., Wellsville, O., $69.30; Mexico, Mo., $73.50; Clearfield, Pa., Portsmouth, O., $83; Perla, Ark., $92.40; Los Angeles, $110.25; Pittsburg, Calif., $111.30.

Sleeves

Reesdale, Pa., $127; Johnstown, Pa., $127.30; Clearfield, Pa., $135; St. Louis, $138; Athens, Tex., $140.90.

Nozzles

Reesdale, Pa., $203.20; Johnstown, Pa., $208.40; Clearfield, Pa., $219.45; St. Louis, $224.65; Athens, Tex., $225.20.

Runners

Reesdale, Pa., $158.20; Johnstown, Pa., $161.70; Clearfield, Pa., $168.60; St. Louis, $170.30; Athens, Tex., $174.40.

High-Alumina Brick

50 *Per Cent:* Clearfield, Pa., St. Louis, Mexico, Mo., $166.30; Danville, Ill., $169.30.
60 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $210.20; Danville, Ill., $213.20.
70 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $244.85; Danville, Ill., $247.85; Clearfield, Pa., $252.

METALLURGICAL COKE

Price per net ton

Beehive Ovens

Connellsville, furnace	$14.50-15.00
Connellsville, foundry	16.50-17.00
New River foundry	20.80
Wise county foundry	15.95
Wise county, furnace	15.20

Oven Foundry Coke

Kearney, N. J. ovens	$24.00
Everett, Mass., ovens	
New England, del.	*26.00
Chicago ovens	24.50
Chicago, del.	26.00
Terre Haute, ovens	24.05
Milwaukee, ovens	25.25
Indianapolis, ovens	24.25
Chicago, del.	28.12
Cincinnati, del.	25.85
Painesville, O., ovens	25.50
Cleveland, del.	27.43
Erie, Pa., ovens	25.00
Birmingham, ovens	21.65
Cincinnati, del.	26.58
LoneStar, Tex. ovens	18.50
Philadelphia, ovens	23.95
Swedeland, Pa., ovens	23.85
St. Louis, ovens	
St. Louis, del.	26.00
St. Paul, ovens	**23.75**
Portsmouth, O., ovens	24.00
Cincinnati, del.	26.62
Detroit, ovens	25.50
Detroit, del.	26.50
Buffalo, del.	28.08
Flint, del.	28.23
Pontiac, del.	27.06
Saginaw, del.	28.58

*Or within $4.55 freight zone from works

COAL CHEMICALS

Spot, cents per gallon, ovens

Pure benzol	36.00
Toluol, one deg.	30.00-33.00
Industrial xylol	30.00-33.50

Per ton, bulk, ovens

Sulphate of ammonia	$44-45
Birmingham area	$49.50

Cents per pound, ovens

Phenol, 40 (carlots, nonreturnable drums)	17.25

FLUORSPAR

Metallurgical grade, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $44; 70%, $42.50; 60%, $38.

Imported, net ton, duty paid, metallurgical grade, $35-$36.

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Lake Iron Ore Prices Are Increased

Cleveland—One leading interest, Cleveland-Cliffs Iron Co., announced new, higher prices on Lake Superior iron ore, effective July 1 for the remainder of the year. Other ore sellers are expected to take similar action.

John S. Wilbur, vice president and manager of ore sales for Cleveland-Cliffs, said the company is establishing its selling prices for third and fourth quarters of this year taking into account the recent wage rate settlement in the iron ore industry which resulted in an increase in ore production costs.

Cleveland-Cliffs has sold substantial ore tonnages based on $9.90 per gross ton delivered at lower lake ports for Mesabi Range non-bessemer ore. The new base price, after including the advances in lake transportation of 5 cents per ton, hitherto paid by the purchaser, increases the cost of the ore to the buyer 15 cents per gross ton, or approximately 2 per cent of the mine value.

The new base prices, effective for ore delivered from July 1, 1953 through the balance of the season for standard grades of iron ore containing 51.50 per cent natural iron delivered rail of vessel at Lake Erie ports, are as follows: Mesabi Range nonbessemer, $9.90; Mesabi Range bessemer, $10.05; Old Range nonbessemer, $10.15; Old Range bessemer, $10.30; open hearth lump, $11.15; high phosphorus, $9.90.

These prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges and taxes thereon, which were in effect on June 24, 1953. Any increases or decreases after that date are for buyer's account.

Iron Ore . . .

Iron Ore Prices, Page 157

Cleveland—Consumption of Lake Superior iron ore increased in May, according to the latest report of the Lake Superior Iron Ore Association. Use during the month totaled 8,358,260 gross tons, an increase compared with 7,764,189 the preceding month, and also a gain compared with 6,949,839 in May of last year.

Consumption to the end of May this year totals 40,068,340 tons compared with 36,384,538 in the like period of 1952.

Total stocks of iron ore on lower lake docks and at furnaces on June 1 were 26,247,318 gross tons. This is an increase compared with 21,572,184 tons on May 1, and compares with 25,904,369 tons on June 1, 1952.

All the signs point to a record monthly movement of lake iron ore in June. Heavy weekly shipments indicate a total movement for the month of nearly 16 million gross tons. The June record is 13,166,130 tons established in 1951.

During the week ended June 22 shipments from the upper lakes totaled 3,208,678 gross tons, bringing the movement to date in June to 12,786,267 tons. The week's shipments brought the 1953 season movement to date to 32,029,873 tons, which compares with 21,437,398 in the like period of the 1952 season.

Tubular Goods . . .

Tubular Goods Prices, Page 139

Pittsburgh—After a few false starts buttweld tubing is finding a better market. Demand for seamless continues strong. The expected slump in tubular goods in fourth quarter will be confined mainly to buttweld. Producers of seamless are booked up through third quarter. Negotiated pipe line material is spoken for through the end of the year.

Philadelphia—Inquiry for pipe for general industrial needs is well main-

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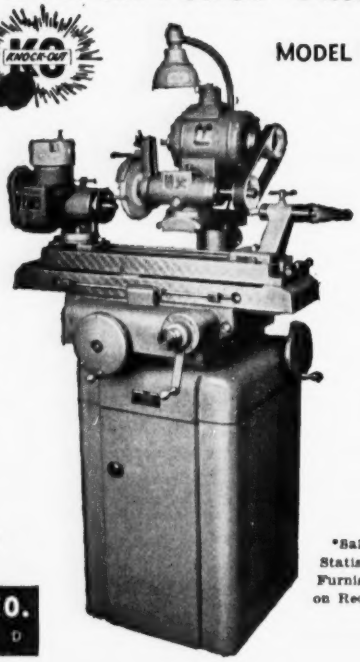

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tained, although plumbing and heating demands are definitely off, with some easing in resale prices noted.

Pig Iron . . .

Pig Iron Prices, Page 132

New York—Pig iron shipments will be approaching low ebb this week as various foundries are going down for mass vacations. Probably the low point will be reached next week, for an increasing number will be down. Some upturn is then expected, although vacation influences will be reflected in some degree until September.

Pig iron consumption during the first three weeks of June was somewhat better than expected, as operations made some gain over the average level for the preceding month.

Higher prices in finished steel products have resulted in some speculation as to an advance in pig iron prices, especially as recent wage increases have affected costs at blast furnaces the same as at steel mills. However, there is little to indicate an immediate change.

Buffalo—Automotive and building equipment casters continue active pig iron buyers. However, an estimated 75 to 80 per cent of current blast furnace output continues to go into steelmaking channels. Some of the smaller jobbing foundries are operating on a curtailed basis, but large melters continue active production schedules.

Boston — Pig iron shipments are light with many shops going down for vacations during July. As a result more foundry and malleable iron is going into stockpile at the district blast furnace.

Philadelphia—While blast furnace operators are being subjected to higher costs for labor and materials, no price boost is indicated. Domestic competition here continues rather sharp and, further there appears to be a softening of prices on imported iron.

Cleveland — Merchant iron sellers report a lessening in demand pressure as the vacation season nears. Expectations are shipments will be down over the next few weeks but should pick up right after the July 4th holiday. Some foundries will continue to take in iron during the vacation period. No stocking of iron is reported at the blast furnaces though more selling effort is required to move tonnage with the foundries maintaining limited inventories.

At the moment market speculation centers around pig iron prices. So far no advances have been announced but the trade will not be surprised should they come. Current iron prices were established more than a year ago.

Youngstown, O. — Republic Steel Corp.'s No. 5 blast furnace at its Youngstown Works was blown out last week for repairs from the mantle up. The unit, of 730-ton capacity, will be down about three weeks. This makes four Youngstown district stacks now down.

Cincinnati—Supply of pig iron is normal in the Cincinnati area. Foundries are stockpiling tonnage while shut down for vacations. The supply of silvery pig iron from Jackson, O., is still tight but is improving steadily.

Chicago—Foundries are preparing for vacation shutdowns starting next month but so far they are not scaling down their raw materials intake. The plan is to take in all the pig iron which suppliers are allowing them. There is enough iron to meet present melting requirements.

Canada . . .

Toronto, Ont.—Business is brisk in the Canadian steel markets. On practically all products mills are booked through third quarter and face a big tonnage carryover into fourth quarter. Steel interests see little prospect of easing in steel supply this year.

A month or six weeks ago there were indications of general easing in supply of hot-rolled steel and some mills abandoned delivery quotas. With restrictions off there was a big outpouring of orders for hot-rolled for third quarter and quotas again have been resumed. Demand remains good for cold-rolled steel and no surplus stocks are reported on plate, sheets and bars.

Canadian mills are maintaining production at an all-time high record and in addition importations from

(Please Turn to Page 162)

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IRON AND STEEL SCRAP

Consumer prices, per gross ton, except as otherwise noted, including broker's commissions, as reported to STEEL. Changes shown in italics.

STEELMAKING SCRAP COMPOSITE

June 25	$40.50
June 18	39.83
May avg.	39.17
June 1952	42.63
June 1948	40.67

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

PITTSBURGH

(Delivered consumer plant)

No. 1 heavy melting	*42.00-43.00*
No. 2 heavy melting	*38.00-39.00*
No. 1 bundles	*42.00-43.00*
No. 2 bundles	*36.00-37.00*
No. 1 busheling	*42.00-43.00*
Machine shop turnings	*26.00-27.00*
Mixed borings, turnings	26.00-27.00
Short shovel turnings	31.00-32.00
Cast iron borings	*30.00-31.00*
Cut structurals	48.00-49.00
Heavy turnings	*40.00-41.00*
Punchings & plate scrap	48.00-49.00
Electric furnace bundles	44.00-45.00

Cast Iron Grades

No. 1 cupola	*42.00-43.00*
Charging box cast	42.00-43.00
Heavy breakable cast	*39.00-40.00*
Unstripped motor block	35.00-36.00
No. 1 machinery cast	49.00-50.00

Railroad Scrap

No. 1 R.R. heavy melt.	*46.00-47.00*
Rails, 2-ft. and under	*52.00-53.00*
Rails, 18 in. and under	*53.00-54.00*
Rails, random lengths	*48.00-49.00*
Railroad specialties	*51.00-52.00*

CLEVELAND

(Delivered consumer plant)

No. 1 heavy melting	*43.00-44.00*
No. 2 heavy melting	*39.00-40.00*
No. 1 bundles	*43.00-44.00*
No. 2 bundles	*37.00-38.00*
No. 1 busheling	*43.00-44.00*
Machine shop turnings	*24.00-25.00*
Mixed borings, turnings	*28.00-29.00*
short shovel turnings	*28.00-29.00*
Cast iron borings	*28.00-29.00*
Low phos.	*46.00-47.00*
Alloy free, short shovel turnings	*31.00-32.00*
Electric furnace bundles	*45.00-46.00*

Cast Iron Grades

No. 1 cupola	*45.00-46.00*
Charging box cast	*44.00-45.00*
Stove plate	*43.00-44.00*
Heavy breakable cast	*38.00-39.00*
Unstripped motor blocks	27.00-28.00
Brake shoes	*38.00-39.00*
Clean auto cast	*46.00-47.00*
No. 1 wheels	40.00-41.00
Burnt cast	35.00-36.00
Drop broken machinery	*48.00-49.00*

Railroad Scrap

No. 1 R.R. heavy melt.	46.00-47.00
R.R. Malleable	49.00-50.00
Rails, 3-ft. and under	52.00-53.00
Rails, 18-in. and under	55.00-56.00
Rails, random lengths	48.00-49.00
Cast steel	*50.00-51.00*
Railroad specialties	*52.00-53.00*
Uncut tires	*51.00-52.00*
Angles, splice bars	52.00-53.00
Rails, rerolling	53.00-54.00

YOUNGSTOWN

(Delivered consumer plant)

No. 1 heavy melting	*45.00-46.00*
No. 2 heavy melting	*42.00-43.00*
No. 1 bundles	*45.00-46.00*
No. 2 bundles	*40.00-41.00*
Machine shop turnings	*26.00-27.00*
Short shovel turnings	*31.00-32.00*
Casts iron borings	*31.00-32.00*
Low phos.	*47.00-48.00*
Electric furnace bundles	*45.00-46.00*

Railroad Scrap

No. 1 R.R. heavy melt.	*47.00-48.00*

PHILADELPHIA

(Delivered consumer plant)

No. 1 heavy melting	41.00-42.00
No. 2 heavy melting	37.00-38.00
No. 1 bundles	41.00-42.00
No. 2 bundles	*32.00-33.00*
No. 1 busheling	41.00-42.00
Machine shop turnings	27.00-28.00
Mixed borings, turnings	32.00
Short shovel turnings	33.00
Structurals & Plate	45.00-46.00
Heavy turnings	39.50-40.50
Couplers, springs, wheels	50.00

Cast Iron Grades

No. 1 cupola	39.00
Charging box cast	40.00
Heavy breakable cast	42.00
Unstripped motor blocks	29.00
Drop broken machinery	47.00-48.00

NEW YORK

(Brokers' Buying Prices)

No. 1 heavy melting	*35.00-36.00*
No. 2 heavy melting	*30.00-31.00*
No. 2 bundles	Nominal
Machine shop turnings	*20.00*
Mixed borings, short turnings	22.00-23.00
Low phos. (structural & plate)	37.00-38.00
Shovel turnings	22.50-23.50

Cast Iron Grades

No. 1 cupola	33.00-34.00
Unstripped motor blocks	22.50-23.00

DETROIT

No. 1 heavy melting	33.00-34.00
No. 2 heavy melting	28.00-29.00
No. 1 bundles	37.00-38.00
No. 2 bundles	25.00-26.00
No. 1 busheling	36.50-37.50
Machine shop turnings	15.00-16.00
Mixed borings, turnings	15.00-16.00
Short shovel turnings	18.00-19.00
Punchings & plate scrap	40.00-41.00

Cast Iron Grades

No. 1 cupola	43.00
Charging box cast	35.00-36.00
Stove plate	35.00-36.00
Heavy breakable	29.00-30.00
Unstripped motor blocks	30.00
Clean auto cast	42.00-43.00
Malleable	44.00

CINCINNATI

(Delivered consumer plant)

No. 1 heavy melting	41.00
No. 2 heavy melting	37.00
No. 1 bundles	41.00
No. 2 bundles	34.00
No. 1 busheling	41.00
Machine shop turnings	21.00
Mixed borings, turnings	23.00*
short shovel turnings	*26.00**
Cast iron borings	23.00*

Cast Iron Grades

No. 1 cupola	43.00
Charging box cast	38.00
Stove plate	28.00*
Burnt cast	28.00*
Heavy breakable cast	37.00*
Unstripped motor blocks	30.00
Brake shoes	29.00*
Clean auto cast	38.00
Drop broken machinery	48.00

Railroad Scrap

No. 1 R.R. heavy melt	44.00
Malleable	45.00
Rails, 18-in. and under	53.00
Rails, random lengths	45.00

*F.o.b. shipping point.

CHICAGO

No. 1 heavy melting	37.00-38.00
No. 2 heavy melting	35.00-36.00
No. 1 factory bundles	*42.00-43.00*
No. 1 dealer bundles	*39.00-41.00*
No. 2 bundles	*33.00-34.00*
No. 1 busheling	37.00-38.00
Machine shop turnings	*21.00-22.00*
Mixed borings, turnings	*21.00-22.00*
Short shovel turnings	22.00-23.00
Cast iron borings	22.00-23.00
Cut structurals	41.00-42.00
Punchings & plate scrap	41.00-42.00
Electric furnace bundles	42.00-43.00

Cast Iron Grades

No. 1 cupola	38.00-40.00
Stove plate	32.00-34.00
Unstripped motor blocks	35.00-37.00
Clean auto cast	40.00-42.00
Drop broken machinery	42.00-43.00

Railroad Scrap

No. 1 R.R. heavy melt	*42.00-43.00*
R.R. Malleable	39.00-41.00
Rails, 2-ft. and under	50.00-51.00
Rails, 18-in. and under	52.00-53.00
Angles, splice bars	46.00-48.00
Rails, rerolling	*48.00-50.00*

BIRMINGHAM

No. 1 heavy melting	31.00-32.00
No. 2 heavy melting	27.00-28.00
No. 1 bundles	29.50-30.50
No. 2 bundles	29.00-30.00
Machine shop turnings	20.75-21.75
Short shovel turnings	22.75-23.75
Cast iron borings	22.75-23.75
Cut structurals	39.00-40.00
Electric furnace bundles	32.00-33.00

Cast Iron Grades (F.o.b. Shipping Point)

No. 1 cupola	39.00-40.00
Charging box cast	30.00-31.00
Stove plate	35.00-36.00
Heavy breakable cast	30.00-31.00
Unstripped motor blocks	34.00-35.00
No. 1 wheels	46.00-47.00

Railroad Scrap

No. 1 R.R. heavy melt.	35.00-36.00
Rails, 2-ft. and under	45.00-46.00
Rails, random lengths	42.00-43.00
Angles, splice bars	45.00-46.00
Rails, rerolling	45.00-46.00

ST. LOUIS

(Brokers' Buying Prices)

No. 1 heavy melting	35.00-36.00
No. 2 heavy melting	33.00-34.00
No. 1 bundles	*34.00-35.00*
No. 2 bundles	*32.00*
Machine shop turnings	*18.00-19.00*
Short shovel turnings	*20.00-21.00*

Cast Iron Grades

No. 1 cupola	41.00-42.00
Charging box cast	33.00-34.00
Heavy breakable cast	33.00-34.00
Unstripped motor blocks	33.00-34.00
Brake shoes	41.00
Clean auto cast	44.00
Burnt cast	33.00-34.00

Railroad Scrap

Malleable	36.00
Rails, 18-in. and under	53.00-54.00
Rails, random lengths	*41.00-42.00*
Uncut tires	44.00
Angles, splice bars	45.00-46.00
Rails, rerolling	*49.00-50.00*

BUFFALO

No. 1 heavy melting	40.50-41.00
No. 2 heavy melting	38.00-38.50
No. 2 bundles	36.00-36.50
No. 1 bundles	40.50-41.00
No. 2 busheling	40.50-41.00
Machine shop turnings	23.50-24.00
Mixed borings, turnings	29.00-29.50
Short shovel turnings	29.50-30.50
Cast iron borings	29.00-29.50
Low phos.	44.50-45.00

Cast Iron Grades (F.o.b. Shipping Point)

No. 1 cupola	*37.00-37.50*
No. 1 machinery	42.00-43.00

Railroad Scrap

Rails, random lengths	45.75-46.75
Rails, 2 ft. and under	51.75-52.75

BOSTON

(Brokers' Buying Prices; f.o.b. shipping points)

No. 1 heavy melting	30.00-31.00
No. 2 heavy melting	*27.00-28.00*
No. 1 bundles	*32.00-34.00*
No. 2 bundles	25.00-26.00
Machine shop turnings	17.00-17.50
Mixed borings, turnings	19.00-20.00
Short shovel turnings	21.00-21.50
No. 1 cast	*30.00-31.00*
Mixed cupola cast	26.00-28.00
No. 1 machinery cast	*38.00-39.00*

SEATTLE

(Delivered consumer plant)

No. 1 heavy melting	$1.00
No. 2 heavy melting	27.00
No. 1 bundles	30.00
No. 2 bundles	24.00
No. 3 bundles	20.00
Machine shop turnings	15.00
Mixed borings, turnings	15.00
Short shovel turnings	15.00
Electric furnace, No. 1	38.00

Cast Iron Grades (F.o.b. Shipping Point)

No. 1 cupola	40.00
Heavy breakable cast	36.00-38.00
Unstripped motor blocks	29.00
No. 1 wheels	38.00-40.00

Railroad Scrap

Rails, random lengths	38.00

SAN FRANCISCO

No. 1 heavy melting	28.00
No. 2 heavy melting	24.00
No. 1 bundles	25.00
No. 2 bundles	22.00
No. 1 busheling	28.00
Machine shop turnings	10.00
Mixed borings, turnings	29.00
Short shovel turnings	29.00
Cast iron borings	29.00
Cut structurals	38.00
Heavy turnings	34.00
Punchings & plate scrap	37.50
Electric furnace bundles	37.00

Cast Iron Grades

No. 1 cupola	38.00-39.00
Charging box cast	47.00
Stove plate	46.00
Heavy breakable cast	45.00
Unstripped motor blocks	41.00
Brake shoes	41.00
Clean auto cast	52.00
No. 1 wheels	47.00
Burnt cast	41.00
Drop broken machinery	52.00

Railroad Scrap

No. 1 R.R. heavy melt.	37.00
Malleable	55.00
Rails, 3-ft. and under	42.00
Rails, 18-in. and under	45.00
Rails, random lengths	39.00
Cast steel	40.00
Uncut tires	39.00
Angles, splice bars	42.00
Rails, rerolling	44.00

LOS ANGELES

No. 1 heavy melting	24.00
No. 2 heavy melting	20.00
No. 1 bundles	24.00
No. 2 bundles	20.00
Machine shop turnings	8.00

Cast Iron Grades (F.o.b. Shipping Point)

No. 1 cupola	40.00-43.00

HAMILTON, ONT.

(Delivered Prices)

Heavy melting	$32.50
No. 1 bundles	32.50
No. 2 bundles	32.50
Mechanical bundles	28.50
Mixed steel scrap	28.50
Mixed borings, turnings	26.50
Rails, remelting	32.50
Rails, rerolling	41.50
Bushelling	26.50
Busheling new factory:	
Prep'd	30.50
Unprep'd	28.50
Short steel turnings	26.50

Cast Iron Grades

No. 1 machinery cast	50.00

† F.o.b., shipping point.

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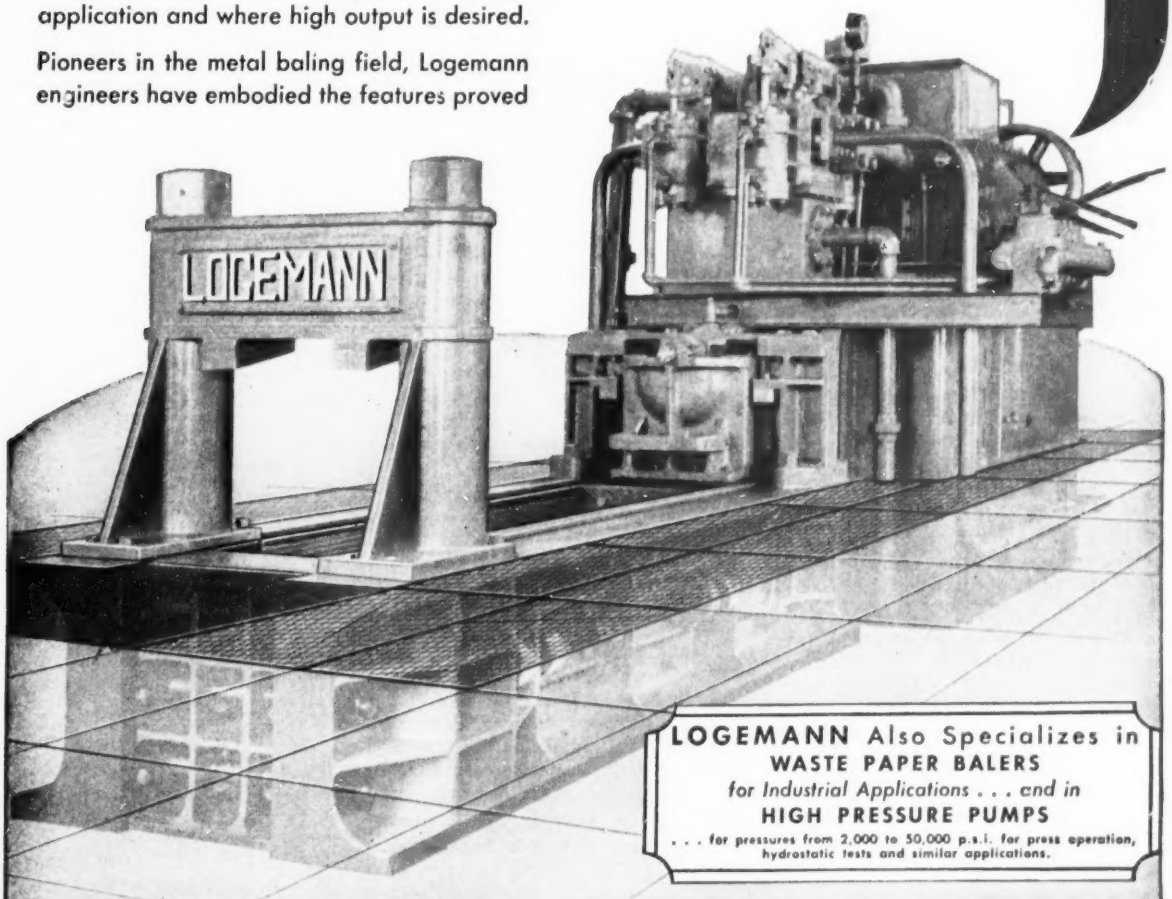

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(*Continued from page* 159)

the United States and Europe are being made to fill gaps in the supply line. European steelmakers have more difficulty meeting competition in the Canadian markets.

In the pig iron markets demand is steady but not absorbing all the available supply of merchant iron. Foundry iron (2.25 to 2.75 silicon) is quoted at $57; basic iron, $57 and malleable iron $58 per gross ton, delivered Toronto.

Scrap . . .

Scrap Prices, Page 160

Washington—Stocks of scrap and pig iron held by consumers on Apr. 30 totaled 7,653,000 gross tons, according to the Bureau of Mines. This was an increase of 96,000 tons over March.

Purchased scrap stocks totaled 4,822,000 gross tons, increase of 71,000 over March and 1,038,000 over Apr. 30, 1952. Home scrap stocks amounted to 1,156,000 tons, increase of 42,000 tons over the previous month. Pig iron stocks totaled 1,675,000 tons, a slight increase over March, and 144,000 tons more than on Apr. 30 last year.

Preliminary figures for stocks of scrap held by suppliers on Apr. 30 are as follows: Dealers and auto wreckers, 1,046,000 gross tons; producers and railroads, 150,000 tons. Total preliminary domestic stocks of all ferrous scrap were 7,174,000 tons on Apr. 30.

Consumption of scrap and pig iron in April totaled 11,794,000 gross tons, a decrease of 616,000 from March. Purchased scrap consumption totaled 3,026,000 tons, a decrease of 185,000 tons from March. Home scrap use was 3,201,000 tons, a decrease of 124,000 from the preceding month. Pig iron consumption amounted to 5,567,000 tons, a decrease of 306,000 tons from March.

Boston—Slightly firmer trend in secondary grades of steelmaking scrap holds on small volume buying. Inventories of both steel and cast scrap are ample for the current melt and most consumers are gearing incoming shipments to current consumption. There is a strong demand for nickel-bearing and straight chromium stainless scrap.

New York—Leading brokers have advanced buying prices on No. 1 heavy melting steel to $35 to $36 and on No. 2 heavy melting to $30 to $31. The steel scrap market has been fluctuating for the past couple weeks, with sentiment currently the strongest it has been for a while. Brokers' buying prices on machine shop turnings are generally higher at $20. Demand for low phos scrap and cast iron is off as a result of various plants being down for vacations or planning to go down shortly.

Buffalo—Steadier tendencies dominate the scrap market here. Improvement is attributed to surprise resistance to lower cast iron prices and buying inquiries from Valley sources. Cast scrap rallied slightly as dealers who participated in recent sales at reduced prices found they were unable to acquire stocks within such price ranges.

Philadelphia—While scrap prices are unchanged there is again a stronger undertone to the market in the major steelmaking grades, as indications point to heavier buying. Turnings and mixed borings and turnings are moving fairly well, although low phos structurals and plate have slowed up as a result of several consumers of this material going down for vacations. This particular situation is not reflected among the mills producing open-hearth steel.

Slowing up in cast grades, particularly No. 1 cupola, reflects an increasing number of suspensions for vacations, with the heaviest impact probably falling during the week following the Fourth of July. Prices remain steady, however.

Pittsburgh—Prices on steelmaking grades of scrap are up a couple dollars a ton largely on strength derived from active mill buying in the Youngstown district. Sluggish demand is reported in this immediate area, and scrap is said to be moving from Pittsburgh to the Valley at prices considerably above those quoted here.

Cleveland—Heavy buying in the Valley has contributed a decidedly stronger tone to the scrap market in this district. With No. 1 heavy melting moving at $45 to $46 in the Youngstown district, prices on this grade at Cleveland have moved up to a range of $43 to $44, and in scrap circles it was said at least one sale has been made here at $45. As a result of the pickup in buying following removal of the steel strike threat the entire scrap market has firmed up, including the scrap grades.

Youngstown—Firming up in iron and steel scrap prices is noticeable here the last few weeks and prices are up substantially. One important scrap concern, however, says it is just a flurry caused by the "jockeying for positon" by an important producer.

Cincinnati—There is not much doing in the scrap market here. Short shovel turnings are up $1 a ton while all other items remain inactive. The open-hearth grades are expected to go up a couple dollars per ton when the mills do their July buying.

Chicago—The upward price pressure on scrap continues although it stems for the most part from broker buying to cover on existing contracts. Brokers are paying $3 to $4 over the

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Gould & Eberhardt 96 H Hobber.
Heald #50 Internal Grinder.
Norton 10 x 24 Surface Grinder.
Sellers 4T Tool Grinder, motor drive.
Sellers 6T Tool Grinder, late type.
Norton 12 x 48 Hydraulic Universal Cylindrical Grinder.
Brown & Sharpe #12 Plain Grinder, reversing mechanism.
Heald 72A3 Sizematic Hydraulic Grinder.
Heald #70A Internal Grinder.
Heald #78 Centerless Internal & Cylindrical Grinder, late type, complete.
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Gould & Eberhardt 16" Back Geared Shaper.
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Smith & Mills 32" Shaper, gear box.
Fellows 725 Gear Shaper with Spur Guide.
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Brown & Sharpe 3-26 Gear Cutter.
Oliver Template Tool Bit Grinder.
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Cincinnati #2 Centerless Grinder.
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Baker #217 Upright Drill Press.
Bardons & Oliver #2 Geared Electric Head Turret Lathe, late type.
Gisholt 1L Saddle Type Turret Lathe, with bar feed, late type.
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LeBlond 25/50 x 6/10 Sliding Bed Gap Lathe, Timken bearing.
Brown & Sharpe 3A Univ. Miller.
Fitchburg 48" Spline Grinder, new 1946.

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FOR SALE—One Harnischfeger (P&H) Overhead Traveling Crane—5 Ton capacity—240 Volt D.C.—36' 10½" span—Complete with Motors and Controllers. Available for inspection at our Buffalo Plant.

BLISS & LAUGHLIN, Inc.
Harvey, Illinois

FOR SALE

(3) 25 Ton HENRY & WRIGHT DIEING PRESSES 1½" Strokes—With Double Roll Feeds. One with Scrap Cutter.

BLISS HIGH PROD. PRESSES

#630 45 Ton and #650 75 Ton 1" Strokes With Double Roll Feed & Scrap Cutters. LATE TYPE. (Send for list of other Presses & Metal Working Mach.)

SEABOARD STEEL CO., New Haven, Conn.

FOR SALE

TYPE M-S BLAST ROOM FOR 2 OPERATORS

Made of 3 16" steel plate—15' long x 7½' x 7½'. Room arranged for inside or outside operation—equipped with fully automatic recovery system—continuous type blast cleaning hose machine. Room requires 8000 C.F.M. ventilating air capacity. Wired for 3/60/220 current. Built by Pangborn. Weight—16,300 lbs. 2 years old. EXCELLENT CONDITION. IMMEDIATE DELIVERY.

DUST COLLECTING SYSTEM (10,000 C.F.M. CAPACITY)

Requires ground area—8 ft. wide x 25 ft. long. Extra 2000 C.F.M. available if used with above blast room. Complete with collector, support, exhauster, fan house, motors and controls. Wired for 3 60 220 current. Built by Pangborn. Weight—18,240 lbs. 2 years old. EXCELLENT CONDITION. IMMEDIATE DELIVERY.

WRITE — WIRE — PHONE

SAN-EQUIP INC.

E. Brighton & Glen Aves.
Syracuse 5, N. Y. Phone 4-4136

market to fill orders.

Incoming scrap is off perhaps a fourth from 30 days ago. A major steel mill consumer is expected to purchase its July requirements momentarily. A small outlying mill is understood to have paid $41 for No. 1 heavy melting and No. 1 dealer bundles.

St. Louis—Noticeably stronger undertone pervades the scrap market, although no mills are buying and dealer scrap is not moving. Some brokers feel the mills have pushed prices down too far too fast, and at least a moderate rebound is due.

San Francisco—Despite increased pressure exerted by a recent drop in steel scrap prices in southern California, the market here continues unchanged. No. 1 heavy melting is $28 a ton here as against $24 in Los Angeles. There also is a $4 per ton spread between No. 2 heavy melting, $24 here and $20 in the southern part of the state. Despite the spread, there has been no great amount of scrap shipped from the southern section. Mills in this locality are absorbing all the scrap offered. No. 1 cupola cast is firm in the $38 to $39 a ton range in the face of an annual two weeks shutdown of foundries for vacations.

Fasteners . . .

Bolt, Nut, Rivet Prices, Page 139

New York—Leading bolt and nut makers believe the recent increases in steel prices will soon be reflected in some degree in higher quotations on their own products.

Apart from a minor adjustment, about 3 per cent last spring, bolt and nut prices have held unchanged since the fall of 1950. Costs, bolt and nut makers declare, have increased far more rapidly than selling prices, especially now with the latest advance in bars and wire rods.

Ferroalloys . . .

Ferroalloy Prices, Page 154

New York—Anaconda Copper Mining Co. has established a price, effective July 1, of $208 per net ton, f.o.b. cars, Anaconda or Great Falls, Mont., for ferromanganese in lump form assaying 79 to 81 per cent manganese. For each 1 per cent above 81 per cent $2.60 is added, while for each 1 per cent below 79 per cent $2.60 is deducted, fractions being in proportion to the nearest one-tenth of 1 per cent. No change is contemplated in the grade of ferromanganese produced which has averaged approximately 80 per cent manganese content.

Pig Iron Production Heavy

New York—Pig iron production in May amounted to 6,519,082 tons, bringing the total for the first five months of the year up to 31,597,344 tons, according to the American Iron & Steel Institute.

Production of ferromanganese, spiegel and silvery iron amounted to 68,033 tons with the total for the first five months amounting to 343,674 tons.

Total blast furnace production amounted to 6,587,115 tons for May, and 31,941,018 tons for the first five months. Operating rate in May was 97.7 per cent, and for the first five months it was 97.2. Annual blast furnace capacity is placed at 79,380,240 tons.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

3500 tons, equipment building, Southern New England Telephone Co., New Haven, Conn., to Topper & Griggs, Hartford, Conn., through Edwin Moss & Co., Bridgeport, Conn., general contractor.

1500 tons, hand railing for New Jersey Garden State Parkway, for bridges south of the Raritan river, to Elizabeth Iron Works, Elizabeth, N. J.

1250 tons, industrial building, Habirshaw Wire & Cable Co., Yonkers, N. Y., to Bethlehem Steel Co., Bethlehem, Pa., through F. H. McGraw & Co., Hartford, Conn., general contractor; same fabricator supplying 75 tons reinforcing.

900 tons, extension, Beachmont station, Massachusetts Transit Authority, Boston, to West End Iron Works, Cambridge, Mass.; Bond Bros., general contractors.

245 tons, climatic laboratory, Mt. Washington, N. H., to Groisser & Shlager Iron Works, Somerville, Mass.; Henry Wile Co., Newton, Mass., general contractor.

200 tons, plant additions, Anaconda Copper Co., Butte, Mont., to Union Iron Works, Spokane, Wash.

115 tons, Cherry Hill high school, near Beltsville, Md., to Barber & Ross, Washington, D. C., through Victor Beauchamp, Washington, general contractor.

100 tons, National Bank building, Spokane, Wash., to Union Iron Works, Spokane.

Unstated, plant additions, Bunker Hill & Sullivan Mining Co., Wallace, Idaho, to Union Iron Works, Spokane, Wash.

STRUCTURAL STEEL PENDING

3330 tons, state bridge work, Philadelphia, and Montgomery counties, Pennsylvania, bids rejected.

3000 tons, state bridge, Westfield river, Agawam, Mass.; bids out shortly.

3000 tons, The Dalles, Columbia river, dam and powerhouse; general contract to Donovan Construction Co., and eight other firms, joint low bidders, $29,820,997.

1496 tons, state bridge, Morrisville, Pa., bids July 17.

1000 tons, hangar, Logan Airport, Boston, American Bridge Division, U. S. Steel Corp., Pittsburgh, low.

900 tons, state thruway bridge work, Herkimer and Oneida counties, New York, bids closed June 25.

800 tons, two river piers, Philadelphia-Gloucester bridge, contract 1, bids closed June 22.

500 tons building, American Can Co., Newton, Mass.; Turner Construction Co., Boston, low, general contract.

415 tons, state bridge, Philadelphia county, Pennsylvania, bids rejected.

400 tons, central power and heating plant,

PEDAL CONTROL
Capacity 750 lbs.
Lifting heights to 60"
Priced from $281.50
(Other models from $236.50)
BATTERY OPERATED
Capacity 1000 lbs.
Lifting heights to 80"
Priced from $672.50
(Other models from $587.50)
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the NEW
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HYDRAULIC LIFTS
...CUTS TIME AND LABOR COSTS down to PROFIT Size!
. . . With these OUTSTANDING features . . .
● Stronger frame.
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PERFORATED
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ALL INDUSTRIES
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CHARLES MUNDT & SONS
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JERSEY CITY 4, N. J.
PHONE—DELAWARE 3-6200
Send for Illustrated Catalog

McGuire, N. J., air force station, bids closed June 21.

200 tons, approaches, Hunt's Falls bridge, Lowell, Mass.

200 tons, building, Du Pont interests, Wilmington, Del., bids June 29.

160 tons, state bridge, Nassau county, New York, bids closed June 25.

151 tons, state bridge, Dauphin county, Pennsylvania, bids July 10.

110 tons, state bridge, Tioga county, Pennsylvania, bids July 17.

Unstated tonnage, $3,887,000 Tarrytown approach, Tappan Zee bridge, Westchester county, New York, bids July 9.

Unstated, 224 trash rack sections; bids to U. S. Engineer, Seattle, Aug. 17.

REINFORCING BARS . . .

REINFORCING BARS PLACED

890 tons, equipment building, Southern New England Telephone Co., New Haven, Conn., to Ceco Steel Products Corp., New York, through Edwin Moss & Son, Bridgeport, Conn., general contractors.

375 tons, Cherry Hill high school, near Beltsville, Md., to Ceco Steel Products Corp., New York, through Victor Beauchamp, Washington, D. C., general contractor.

175 tons, hospital addition, Bellows Falls, Vt., to Fabricated Steel Products Co., Quincy, Mass., through McMillan Co., Inc., Keene, N. H.

REINFORCING BARS PENDING

34,000 tons, The Dalles dam and powerhouse; general contract placed by U. S. Engineer, Portland, Oreg.

3100 tons, bridges and highways, Ohio turnpike; bids July 8, Ohio Turnpike Commission, Columbus.

2300 tons, disposal tanks, Hanford Works, general contract to Grove, Shepherd, Wilson & Kruge, Seattle, low $2,428,468.

1200 tons, bridges and highway, Ohio turnpike; bids June 30, Ohio Turnpike Commission, Columbus.

560 tons, Garden State Parkway, contract No. 66, section S, New Jersey, bids July 9.

400 tons, two bridges, Cuyahoga river, Ohio turnpike; bids June 30, Ohio Turnpike Commission, Columbus.

225 tons, Washington state highway girder bridges, Pierce county; bids to Olympia, July 7.

PLATES . . .

PLATES PLACED

300 tons, tanks, Board of Public Works, Logansport, Ind., to Pittsburgh-Des Moines Steel Co., Pittsburgh.

PLATES PENDING

1700 tons, Hanford Works disposal tanks; general contract placed.

RAILS, CARS . . .

LOCOMOTIVES PLACED

Roscoe Snyder & Pacific, one 800-hp switcher, to Electro-Motive Division, General Motors Corp., La Grange, Ill.

RAILROAD CARS PLACED

Atchison, Topeka & Santa Fe, 250 seventy-ton covered hopper cars, to the Pullman-Standard Car Mfg. Co., Chicago.

Baltimore & Ohio, 100 seventy-ton flat cars, one 75-ton well car, one 125-ton well car and one 125-ton flat car, to own shops at DuBois, Pa.

Bangor & Aroostook, 500 forty-ton box cars to American Car & Foundry Co.

Bangor & Aroostook, 500 fifty-ton box cars, to American Car & Foundry Co.'s plant at St. Louis.

Birmingham Southern, 15 seventy-ton covered hopper cars, to Pullman-Standard Car Mfg. Co., Chicago.

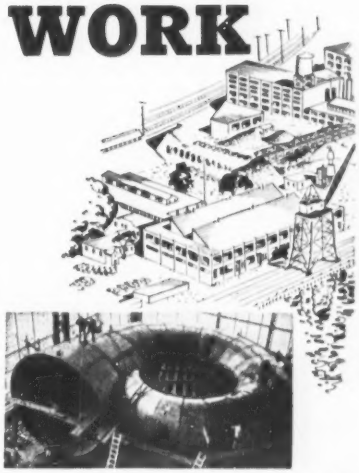
Delaware & Hudson, 25 seventy-ton covered hopper cars, to Pullman-Standard Car Mfg. Co., Chicago.

Norfolk & Western, 25 seventy-ton flat cars, to own shops.

Savannah & Atlanta, 100 fifty-ton box cars to Pullman-Standard Car Mfg. Co., Chicago.

Southern Pacific, 100 automatic air-operated dump cars, to Baldwin-Lima-Hamilton Corp., Eddystone, Pa.

STEEL PLATE WORK



TURBINE CASINGS and other heavy steel plate work are fabricated at Puseyjones of Hot-Rolled, High-Strength, Low-Alloy Steel.

Every facility for large scale metal fabricating: — Heavy plate shop equipment — Rolls — Shears — Bending furnaces. Stress relieving furnace 33'x18'x16' up to 2100°F. Machine shop for facing, turning, and boring. 50 ton capacity gray iron foundry. Deep-water transportation on one side, the Pennsylvania RR on the other. Talk to our development engineers.

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Established 1848

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Faster assembly . . . no more failures of fasteners. GREER STOP NUTS hold firm against jolts, shocks, shimmy, wobbles . . . any vibration, any kind.

Bolt threads are gripped tightly . . . these famous nuts *never* work loose. Yet an ordinary hand wrench gives instant release. The tough, built-in GREERCOID collar does it . . . and seals against fluid leakage, too!

Study *your* fastener problem. Over 3000 types and sizes. Consult GREER. Proved on thousands of products. Meets gov't and military specifications.

Write

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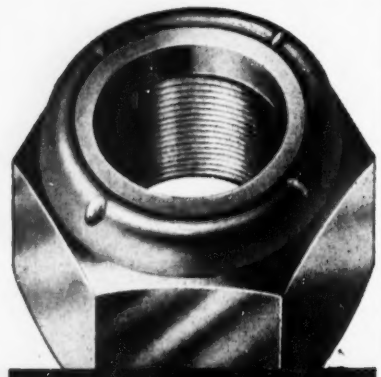

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Farval lubrication holds transfer machine to continuous production

THIS Ex-Cell-O transfer machine is in a famous automobile engine plant. Its job is precision boring of the main bearing line (held to 0.0005 inch tolerance), the cam line (held to plus or minus 0.001 inch) and the distributor bore. It is built to operate at top speed, with uniform precision and efficiency.

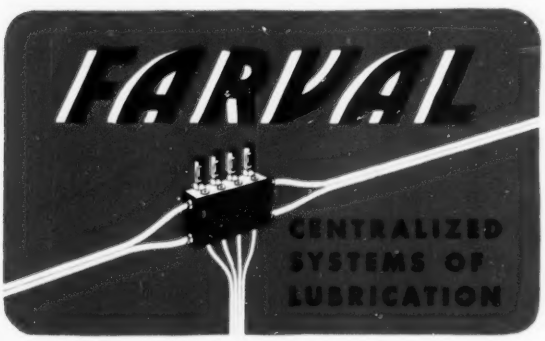
To avoid shutdowns for oiling and for bearing repairs that accompany haphazard methods of hand lubrication, a Farval automatic lubricating system was installed. Farval lubricates while the machine is in full operation, entirely eliminating downtime for oiling, increasing bearing life, and allowing higher machine speeds by keeping bearings cooler.

Farval is the original Dualine system of centralized lubrication that delivers oil or grease under pressure to a group of bearings from one central station, in exact quantities, as often as desired. The Farval valve has only two moving parts—is simple, sure and foolproof, without springs, ball-checks or pinhole ports to cause trouble. The easy-to-see indicators at every bearing show that each valve has functioned.

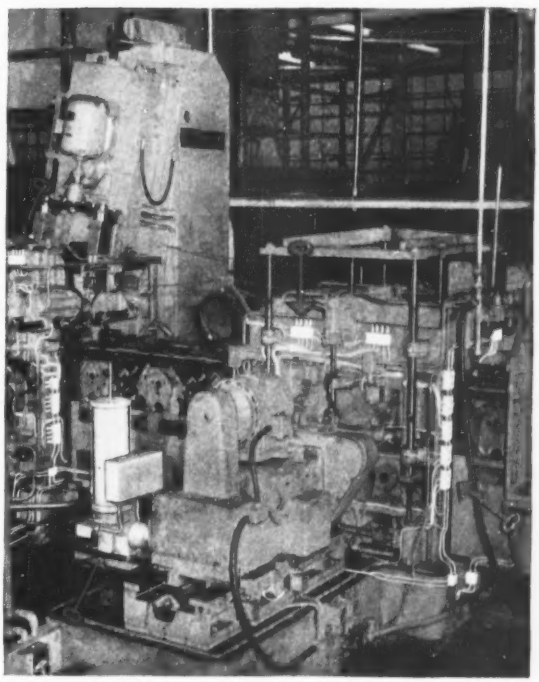
Today Farval protects millions of bearings in the automobile and allied industries, wherever equipment must be lubricated regularly and adequately to keep bearings on the job no matter how hard to get at.

Find out how Farval can help keep your equipment running continuously for maximum production. Write today for free Bulletin 26. The Farval Corporation, 3270 E. 80th St., Cleveland 4, Ohio.

Affiliate of The Cleveland Worm & Gear Co., Industrial Worm Gearing. In Canada: Peacock Brothers Limited.



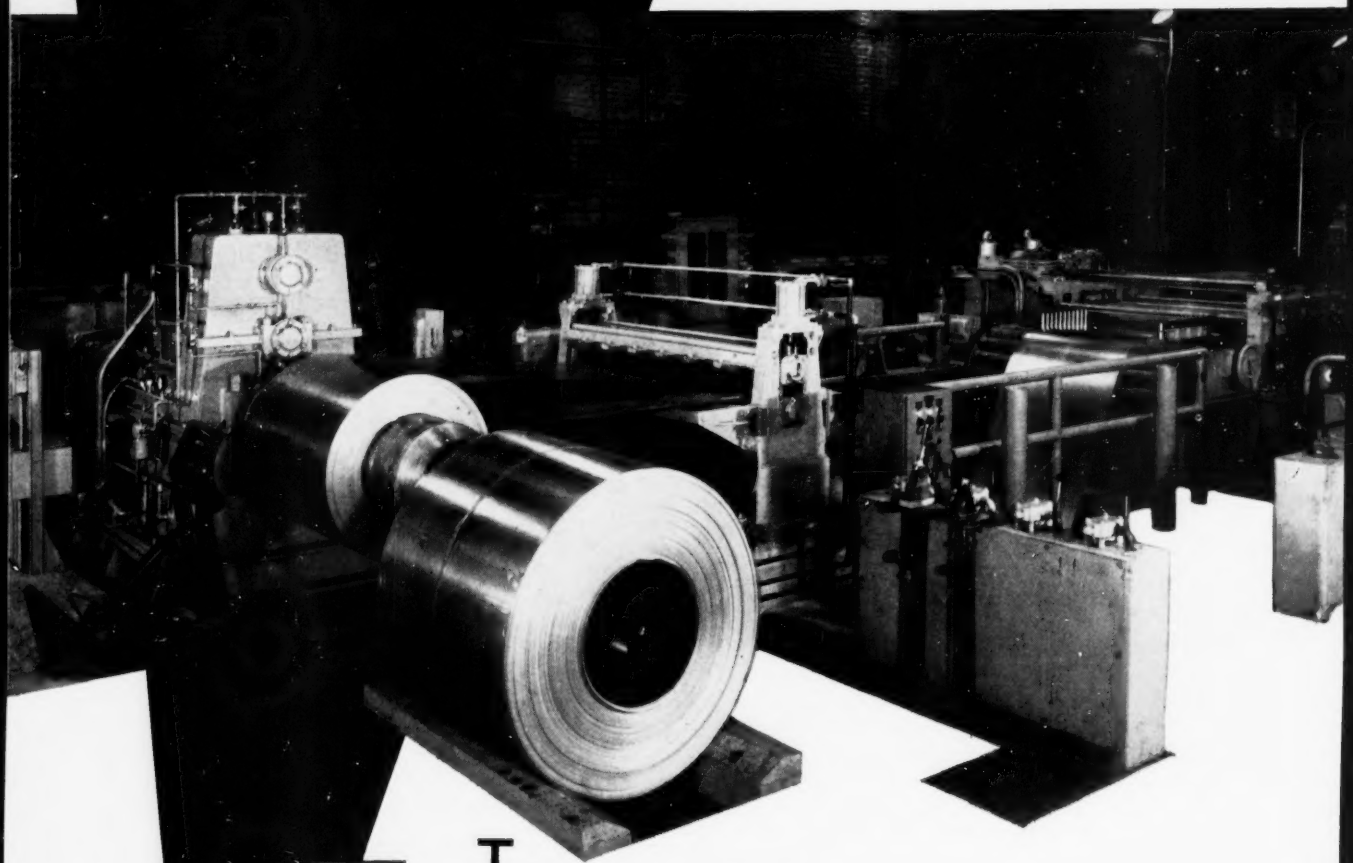
FARVAL—*Studies in Centralized Lubrication*
No. 146



KEYS TO ADEQUATE LUBRICATION—Wherever you see the sign of Farval—the familiar valve manifolds, dual lubricant lines and central pumping station—you know a machine will be properly lubricated. Illustration by courtesy of Automotive Industries.

The WEAN Engineering Company Inc.

Warren, Ohio . .



THE Wean Engineering Company, Inc., Warren, Ohio, is a recognized specialist in the design and installation of sheet, tin and strip mill equipment. The expert knowledge and trained imagination of one of the world's most noted steel mill engineering firms is at your service when you specify Wean — whether the job calls for a single piece of equipment or a complete design of an entire line.

SPECIALISTS IN SHEET, TIN & STRIP MILL EQUIPMENT